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United States Supreme Court

October Term, 1906.

No. 3. Original.

THE STATE OF KANSAS, COMPLAINANT,

vs.

THE STATE OF COLORADO, ET AL., DEFENDANTS.

THE UNITED STATES OF AMERICA, INTERVENORS.

REPLY BRIEF FOR DEFENDANT, THE COLORADO FUEL AND IRON COMPANY, TO THE BRIEF FOR THE UNITED STATES, ON FINAL HEARING.

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I. The Colorado Fuel & Iron Company Has Pleaded the Constitution of Colorado as a Defense.

The United States brief, after referring to the defense of the state of Colorado based on the provisions of the Colorado Constitution as to water con-

trol, says that it will be noticed that this defense is not raised by the answer of The Colorado Fuel & Iron Company.

The amended bill of Kansas (page 69) refers to, and complains of, this provision of the Colorado state Constitution.

The answer of this company (page 196) is as follows:

"10. The provisions of the Constitution of the state of Colorado complained of were adopted in harmony with and in pursuance of the policy of the United States in respect to the diversion and use of water, and the same do not conflict with or contravene any act of congress, but, on the contrary, are in harmony with such acts, and are intended as a constitutional guaranty that the right to divert water for beneficial purposes as authorized and encouraged by the acts of congress should never be denied, and said provisions were accepted and approved by the action of congress in admitting Colorado into the Union, and the several acts of the legislature of Colorado, referred to in said bill, have been enacted for the purpose of protecting and regulating appropriations made in pursuance of the usages and customs prevailing in the arid region and the rights of appropriation as recognized and confirmed by the acts of congress."

As we view it, it was and is unnecessary to make further reference to it as a defense, or, indeed, to have made any reference to it, inasmuch as it is pleaded as a defense in the answer of the state of Colorado, and we are contending for the prosperity and existence of her people, on which that of this company necessarily depends.

II. The Riparian Doctrine Does Not Prevail Throughout Kansas.

The United States brief (page 199) says that the crucial question in this case is as to the law in regard to the waters of non-navigable interstate streams which rise in a state where the doctrine of riparian rights has been abrogated, and flow thence into a state where such doctrine prevails.

That does not quite correctly state the condition of affairs. It is giving Kansas more credit than she deserves, or has ever claimed, otherwise than in her bill in this case.

Kansas, by her legislative enactments in 1859, 1860, 1868, 1886, 1891 and 1899, also recognized the use of water for irrigation. These acts are quoted in the answers of the defendants.

The doctrine was fully recognized by the Kansas Supreme Court in Campbell vs. Grimes, 64 Pac., 62, and Koen vs. Klein, 65 Pac., 684. In the latter case it is said:

"In view of the fact that the legislature of Kansas has in so many ways recognized the principle of irrigation, and bestowed upon companies organized for that purpose so many rights, we can not hold that sections 1326 and 1327 take away from such companies all their characteristic rights as promoters of the public use."

The evidence shows that under these statutes and decisions numerous ditch companies were incorporated under the Kansas laws and took out water for irrigation in western Kansas, and, for the protection of these irrigators, Kansas pleads in her brief (but

not in her bill), in case she should fail in her maintenance of the doctrine of strict riparian rights.

It is an actual demonstration of an attempt to carry water on both shoulders, which, it is said, can not be done.

Kansas has waited some 20 years before attempting to protect these irrigators. We submit that it is now too late. These irrigators and Kansas have stood quiescent too long to be allowed to upset Colorado irrigation, especially when sought to be done in a brief only.

The only questions legitimately in the case are, whether Kansas can claim, as against Colorado, and in Colorado the strictest application of the riparian doctrine, has satisfied the court that the sovereign right of state control of its waters has been constitutionally surrendered, and has also proven an actionable injury of a kind and of sufficient magnitude to require the interposition of this court. The question of priority between irrigators on interstate streams, or on any other streams, is raised only by the United States in their petition of intervention.

III. All Streams Which Do Not Sink Are Interstate.

The brief of the United States refers with great frequency to "interstate" streams.

We called attention in our original brief to the fact that, except in land-locked lakes and in a few rare cases where streams sink in the plains, all water and streams are, of necessity, interstate.

We had hoped that counsel would, if any stress were laid on the interstate character of streams, point

out why this statement in our original brief was incorrect.

One of two things must be admitted: either that all streams (with the insignificant exception above referred to) are interstate in their character; or, the character is to be determined by the fact that the stream bears, or does not bear, the same name in two or more states.

The bill of Kansas and its brief deal with the use of the water of the Arkansas *river* only as the sole basis of complaint, making no reference whatever to its tributaries as factors in the controversy.

If these tributaries are excluded in fact, as they are ignored in argument, there would be no water worth contending for in the Arkansas river.

If the mere fact that the Arkansas river has the same name in Kansas that it has in Colorado makes it an interstate stream, then if it had forked just within the eastern boundary of Colorado, and these forks had received other names, the junction of the forks would have been the upper limit of its interstate character and the contention in this case would have been much restricted.

Take, for instance, the Colorado river: it is formed by the confluence of the Grand and the Green rivers in southern Utah and runs as the Colorado river from Utah into Arizona. Treated as the arguments of Kansas and the government treat this case, its interstate character would not continue above the junction of the Grand and the Green.

Following then the Grand river eastward over into Colorado, we find that, a short distance inside the Colorado line, it also forks; the north fork re-

taining the name of Grand river, while the south fork is called the Gunnison river.

The Grand river, then, treated as the Arkansas has been in this case, would be an interstate stream (as between Colorado and Utah) from its source to its junction with the Green in Utah, while the Gunnison river would not be treated as an interstate stream at all.

It will scarcely be claimed, however, that the name given to the stream determines its interstate character.

These suggestions are for the purpose of showing that the question of control of interstate streams is not confined to streams which, like the Arkansas river, happen to bear the same name from one state into another, but that, as before stated, all streams which do not lose themselves in plains or basins are, in fact, interstate streams, and therefore the question really involved in this case is the control not only of the Arkansas river, but of all of its tributaries in Colorado.

If we understand the contention of Kansas as stated on page 244 of her opening brief on final hearing, it is that she is entitled to the normal flow of the Arkansas river—whatever that is—at the state line.

Assuming that such flow can be ascertained from the evidence, and the head gates of ditches in Colorado are to be closed in the inverse order of priority until such flow appears at the Kansas line, it follows of necessity that the investigation and closing of ditches to accomplish the result sought for by Kansas, must not only proceed up the Arkansas river itself, but also up each of its tributaries, each ditch

receiving its quietus, or running directions, as the case may be, so as to produce the normal flow at the Kansas line at that particular date.

Frequently thereafter high water will occur in a tributary in Colorado so that the surplus water from that stream alone will furnish the normal flow at the Kansas line. How are the closed ditches on other tributaries to be relieved from their obligation to let the water run by them, and who is to authoritatively advise them on this subject?

The same difficulties will arise from high water in one or more tributaries between the Kansas line and Wichita, which may furnish even more water than the Kansas people want.

No provision for such variable conditions, likely to occur almost every day, can be made in a decree. They require constant exercise of judgment and discretion.

It is to avoid these difficulties that the arid states divide their water control. Colorado is divided into five divisions, in charge of that many division engineers. These are subdivided into 68 districts in charge of that many commissioners. There is one division and ten districts and commissioners in the watershed of the Arkansas in Colorado, each district comprising one tributary, or two more tributaries near to each other. The irrigators and district commissioners on the Purgatory river have no concern with the water on any other tributary of the Arkansas not in their district, because the water of that district does not flow into theirs, and vice versa. The administration is thus greatly simplified and rendered possible.

The contention of counsel for Kansas and the United States, if sustained, will place every tributary

of the Arkansas in subordination to the demand for a normal flow in the river at the state line, and all these practically independent systems will be involved in inextricable confusion; indeed, will be destroyed. It involves an impossibility.

What plan or system do counsel suggest? None. Can they suggest anything that will be either practicable, or generally better and more useful?

If they answer, "Let the federal government take charge of it," we say: "Point out the clause of the Constitution which authorizes it, and gives the court the power to impose upon congress a duty which it has continuously refused to undertake."

To affirm, then, the doctrine contended for by Kansas and the United States, means to deny to every arid state any control whatever of the streams within its boundaries, and to strike down the irrigation laws and rights of fifty years' growth, even as to the smallest rill in the mountains, and leave at sea the whole question of irrigation rights and their administration in all the arid region.

IV. Colorado Is an Independent Nation in Respect to the Control of Its Waters.

In our original brief we discussed at considerable length the right of Colorado, as well as all other arid and semi-arid states, to control the waters within their boundaries in so far as is necessary for the welfare of their people.

Counsel for the United States in their brief contend that neither our claim, as above stated, nor that of Kansas, as to the existence of the riparian doctrine,

is correct, but that priority of appropriation should give priority of right, regardless of state lines.

Some of the arguments by counsel for the United States on this subject seems also to call for a reply.

They concede "that if Colorado were an independent nation, our claim of state control would be tenable."

The question whether the arid states have the rights of independent nations in respect to their waters can not be determined from what is said in cases involving other questions of state rights.

It may be that some of the statements in New Hampshire vs. Louisiana, 108 U. S., 90, in regard to the powers retained by the several states, seem inconsistent with those in Texas vs. White, 7 Wall., 725, Escanaba vs. Chicago, 107 U. S., 678, and other cases. It is not our duty to reconcile them, although it is easily done by limiting the statements in each case to the facts involved and the circumstances surrounding it.

What might be the effect of the doctrine we contend for upon perennial streams of large volume in the humid region, which, under no ordinary condition, could be exhausted by any one state in caring for the necessities of its people, does not necessarily determine the law in states where the streams are small and the necessities of the people for irrigation may require their substantial exhaustion.

In relation to the Connecticut river, which flows from Massachusetts into Connecticut, and the question whether the former state would have a right to take out all the water from the river and leave none for the people of the state of Connecticut, it might be possible that if such action were essential for the

prosperity of the people of Massachusetts, she would have such right.

It is scarcely conceivable, however, that any necessity could ever arise which would require Massachusetts to apply to proper uses and absolutely *consume* all the water of the Connecticut river.

As is said in the United States brief, quoting from Beardsley vs. Hartford, 50 Conn., 541:

"It is a well settled rule that the law varies with the varying reasons on which it is founded. * * * If the reasons on which the law rests are overborne by opposing reasons, which, in the progress of society, gain a controlling force, the old law, though still good as an abstract principle, and good in its application to some circumstances, must cease to apply as a controlling principle to the new circumstances."

This adaptation of law to conditions is recognized by the courts in numerous cases, and especially pertinent is Clark vs. Nash, 198 U. S., 361, which recognizes and affirms the right of a land owner in Utah to condemn a right of way for a private ditch, owing to the peculiar conditions and requirements of an arid country, while in states where such conditions do not exist, condemnation of private property can only be had for a public purpose.

So it is clear that what might be law in Massachusetts is not necessarily the law in the arid states.

Water is said to be as essential to life as air, and it has been asked if one set of people could appropriate the air so as to destroy the lives of others. We answer yes, if it was essential to the existence of the first set, and they in possession. The man in a ship-

wreck who first gets upon a plank, which will support but one, has a right to hold it against all comers.

So, if all the water in the Arkansas river at any given point in Colorado is essential to the prosperity of Colorado people, they may take it.

If we are lovers of fish and live on the Arkansas river, and Kansas people, under her laws, have seined out all the fish in the river, so that none pass up to Colorado, as they may lawfully do, we must quit eating Arkansas river fish. It is no answer to say that fish are food and food is essential to life. No particular food is essential, nor is any particular water always essential. If a Kansas farmer can't get Arkansas river water, he must get some other. He can either get artesian water, resort to dry farming, or change his business, if driven to such extremity, which, however, is not claimed.

And this partly because of the impossibility of obtaining relief, and partly because, owing to the existing conditions, his relief would injure a multitude of Colorado people much greater than the denial would injure him.

It has been asked if, under the doctrine of state control, one state could not build an enormous dam and flood the upper state. We answer that we can imagine no possible condition where such action could be a necessity for the welfare, protection or prosperity of the people of the lower state; besides, it would be an actual invasion of territory, and does not seem parallel.

There are few rules of law, however, which, if carried to the extreme and beyond the bounds of possible necessity of human action, will not work injus-

tice to some one. Each legal right must be governed by surrounding conditions.

We enforce the statute of frauds for the protection of many to the injury of the few.

Much of the popular strength of the doctrine which would disregard state lines grows out of the alleged inequity which subjects a prior appropriator in the lower state to the junior appropriator in the upper one, and the cases referred to by counsel for the United States are those in which the issues were simple, and the equity of the particular case clear. Take, for instance, Morris vs. Bean, recently and finally decided in 146 Fed., 423. That case involved the waters of Sage creek, an insignificant stream rising in Montana, and running but a few miles in that state and thence into Wyoming; the prior appropriator's operations were in Wyoming, the junior appropriator's operations were a short distance above him, but in Montana.

The conditions affecting the flow of the stream, dates and locations of ditches, were mere neighborhood affairs, and within easy knowledge of those concerned, and the remedies simple. But such cases do not represent all the equities involved in the doctrine of disregard of state lines.

To illustrate, A, in Kansas, 100 miles below the Colorado state line, in 1890, built a ditch from the Arkansas river, and appropriated the water necessary to irrigate his land. He did so presumably without knowledge, or attempt to inform himself, as to prior appropriations either in Kansas or Colorado. He simply found some water flowing in the Arkansas river at the time he took out his ditch. He did know, however, that above him, and on the Ar-

kansas river, were thousands of acres of arid land, and that there was a certainty that numerous other appropriations of water would be made from the river. He also knew that the laws of Colorado provided how one desiring water from the Arkansas river in Colorado could ascertain the prior appropriations and whether there was water enough for him, and if so, have his right thereto approved and fixed by the executive and judicial departments of the state.

A day or two after A's appropriation, B, in Colorado, 100 miles above the Kansas line, and 200 miles above A's headgate, also finds water running in the Arkansas river, or one of its tributaries, and takes out a ditch to irrigate his land. He is without means of determining whether there were any prior appropriations to his, further than as shown by the records in Colorado pertaining to his water district, and he finds therefrom that there is unappropriated water sufficient to supply his ditch, and proceeds under the laws of Colorado to acquire a right to the water he needs.

Each party proceeds to use the water and farm his land.

It also appears that since 1890 several hundred other ditches were taken out between these two headgates, until finally, in 1901, A finds that water is getting scarce at his headgate in certain years, and at certain times of the year. He brings his action in some court, no matter where, to close B's ditch.

The mere question of priority of *time* in appropriation is proven in favor of A, but that is all the equity there is on A's side.

On the other side is A's prior knowledge of the progress of settlement, the consequent necessities above him likely to demand water and the laws of

Colorado relating thereto; it also appears that B had done everything possible to secure and protect his water right, and that, although the court should close down B's ditch, the water thus left in the stream might never reach A's headgate.

It is by no means clear that a court under these conditions would even award an equitable priority to A, but it is clear that when consideration was also given to the fact that these several hundred intervening ditches, all of which were junior to B, must first be closed before the closing of B's ditch would avail anything, the court would hesitate long before finding the equities in A's favor, and closing B's ditch.

A decree in favor of Kansas, if one could be devised, would require a United States marshal or soldier at the headgate of every ditch in Colorado to enforce it, without a rule or guide to govern them.

If the interest of a prior appropriator in a lower state must be protected by reason of his appropriation prior to statehood, or for any other reason, why not let it be by giving him an action for damages against the junior appropriators in the upper state?

This will involve much less complication than to try to give him the water, and will not interfere with principles of economic irrigation, inflict consequential injury on others, or involve a life-long conflict in the enforcement of his prior right to the water, if, indeed, he has any when all the equities are considered.

If the facts in Morris vs. Bean had been as we have suggested, the decision could not have been as it was. What it could have been, we must leave to imagination.

Ordinary legal and water knowledge such as we possess, fails to point out any remedy for A that can

be legally or equitably enforced, or that ought to be enforced at all.

This condition has been long recognized by most appropriators in lower states, and (except in a few cases like Morris vs. Bean) they have adjusted their affairs accordingly, and are not now seriously injured or complaining.

Few, if any of them, would attempt to avail themselves of the abrogation of state lines, if such doctrine were established.

Counsel, in support of their assertions, content themselves with the citation of these few cases in inferior courts, all of which dealt with disputes in small streams near state lines, where the facts and priority were undisputed, and where but few ditches were involved, but did not consider how impossible it would have been to carry out and apply the doctrine if conditions had been such as we have surmised, and which are the actual conditions in the case at bar, and will be in a great majority of cases in the arid states, if state lines are to be disregarded.

In the United States brief (page 202) it is stated as the opinion of counsel, referring to the disregard of state lines and control, that—

"There is nothing in the federal Constitution that would prevent the court from applying the rule."

We do not look to the federal Constitution for obstacles in the way of this court's declaration of the law on such questions as these, but look for something authorizing the court to make such a declaration, and, finding nothing, the authority does not exist.

We do find, however, that by article X of the federal Constitution—

"The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively, or to the people."

And in United States vs. Knight, 156 U. S., 11-14, it is said:

"It can not be denied that the power of a state to protect the lives, health and property of its citizens, and to preserve good order and the public morals, 'the power to govern men and things within the limits of its dominion,' is a power originally and always belonging to the states, not surrendered by them to the general government, nor directly restrained by the Constitution of the United States, and essentially exclusive."

Counsel for the United States, in support of their contention against state control, cite, on pages 190 and 191 of their brief, a number of cases, to which we have already referred in our original brief, and, as we believe, shown that they are without force on this contention.

They also cite Powell vs. Johnson, 89 Fed., 556, and Miller vs. Rickey, 127 ib., 573. These cases were decided on demurrer or motion for preliminary injunctions, and an examination of them will show that they were based chiefly on sections 2339 and 2340 of U. S. Rev. Stat., relating to vested and accrued water rights, and none of them involved the question of the power of a state to protect its natural resources when necessary for the benefit of its own people, that question not having been discussed.

Perkins vs. Graff, 114 Fed., 441, is also cited, but which, instead of being against us, is in our favor. In it the water in question was obtained from the Platte river in Colorado, and carried eight miles in Colorado and thence into Nebraska.

The control of its water by the state of Colorado, under its Constitution and laws, is expressly recognized; the defendants in that case procured their water rights thereunder, and the decision shows that it was surplus, or unappropriated water from the river which was being used, and that there was not only no violation of the state laws, in that respect, but that the proceedings were in strict conformity therewith.

In the opinion of Attorney General Harmon (Vol. 21, Opinions of Attorney General, 274), in regard to the controversy with Mexico over the waters of the Rio Grande, in which Mexico was complaining of the use of the water of the river for irrigation, within the United States, it is said:

"So it is evident that what is really contended for (by Mexico) is a servitude which makes the lower country dominant and subjects the upper country to the burden of arresting its development and denying to its inhabitants the use of a provision which nature has supplied entirely within its own territory." * * *

"All exceptions, therefore, to the full and complete power of a nation within its own territory must be traced up to the consent of the nation itself. They can flow from no other legitimate source. * * * So strongly is the principle of general and absolute sovereignty maintained that it has even been asserted by high authority that admitted international servitudes cease when they conflict with the *necessities* of the servient state. * * * Whether this be true or not,

its assertion serves to emphasize the truth that self-preservation is one of the first laws of nations. No believer in the doctrine of natural servitudes has ever suggested one which would interfere with the enjoyment by a nation within its own territory of whatever was necessary to the development of its resources or the comfort of its people. * * * The claim involves not only the arrest of further settlement and development of large regions of country, but the abandonment, in great measure at least, of what has already been accomplished."

While it is true that these remarks refer to the United States as a nation, they necessarily apply in full force to Colorado and other states similarly situated, unless they have constitutionally surrendered their sovereignty to such an extent as renders them powerless to resist encroachments on their domain which will *arrest their development and deny to their inhabitants the use of things which nature has supplied them, entirely within their own territory, and not only arrest the further settlement and development of large portions of their area, but also involve the abandonment of what has already been accomplished.*

It is scarcely necessary to say that if the states had understood that the formation of the Union meant this, the Union would never have been formed.

In all cases cited in which the United States or other nations contended for the right to navigate international waters, the only right involved or discussed was the right of navigation.

In no sense did they involve the right to consume, or partially consume, for beneficial purposes, the water by the nation in whose boundaries it existed, and these cases are not in point here.

In the controversy between the United States and Mexico, just referred to, Attorney General Harmon's conclusion was stated thus:

"In my opinion the rules, principles and precedents of international law impose no liability or obligation upon the United States."

This involved the very question at issue in the case at bar, and the right thus insisted on for the United States rests on the highest duty of a nation, namely, to use its internal resources for the benefit of its own people, even if those of a friendly nation are thereby the sufferers.

This right is the most important of all state rights; it lies at the very foundation of a state's existence, and it has not been pointed out, either by counsel for Kansas or the United States, where and when, in terms or by implication, it has been surrendered to the federal government.

In the United States brief (page 191) it is admitted that:

"Each state, however, is sovereign to the extent that it may adopt any law necessary to the development of its resources and for the protection of its citizens in their personal and property rights."

This power, as the brief states, is subject to certain limitations, not important in this case.

This doctrine of sovereignty as there stated is satisfactory to us for the present case.

We assert that the evidence shows without contradiction that the appropriation of the water of the Arkansas river by the citizens of Colorado, to the ex-

tent to which it is now appropriated, is necessary to the "development of the resources of the state and the protection of its citizens," and that there is no equity in declaring that Kansas may have any of this water even if it should be *equally essential* to the development of her resources and the protection of her citizens. Upon this rock we stand.

If, then, Kansas has no superior right to the waters of the Arkansas river as against Colorado, the necessities of each being equal, or that of Colorado being greater, there remains nothing of fact to be considered except the effect of the control by the upper state of its waters, upon the Reclamation Service of the United States, if such a question can properly be made an issue by a petition of intervention. But in no event could that question, found either way, override the law.

The cases are few where people in the lower states have taken out earlier ditches. They may be the sufferers, but the interest of those few must be postponed to that of the many.

In Anderson vs. Bassman, 140 Fed., 29, cited in the brief, the court divided the water by closing the defendants' ditches for five days in every ten days from June to October in each year. The court in the decree say that to "divide the water so as to allow a certain number of inches to the complainant and a certain number of inches to the defendants is *plainly impracticable,* and the only method that appears to provide a just and equitable division is to allow the complainant and defendants the use of the water alternately during the dry season," a simple enough thing to do, and easily enforced in such a case as that.

But how can any court close several hundred of the latest ditches in Colorado for a fixed period in order to supply water to a few prior ditches away down in Kansas, and at the same time keep the hundreds of other ditches between, in Kansas and Colorado, from helping themselves to the water as it comes along?

We desire again to emphasize the statement made in our original brief, and not denied by that of Kansas in reply, or that of the United States, to the effect that Kansas (and every other arid or semi-arid state) receives from sources within its borders *more water than it does from interstate streams.*

If Kansas can demand of Colorado that the normal flow of the Arkansas at the Colorado line must be maintained, then Oklahoma can demand of Kansas that such flow, augmented as it will be by the waters originating in Kansas, must be maintained at its exit from Kansas, and thus the people of Kansas generally will suffer by the doctrine its counsel contend for, and this result will follow in every one of the states referred to when their entire area and the use of the water therein is considered.

V. Users of Water Under the Reclamation Act Can Have Protection Only in Case of State Control.

In our original brief we called attention of counsel representing the United States to the following matters:

1. As to how the users of waters under the reclamation act can have authoritative determination as to the amount of water to which each is entitled, and

adequate future protection therefor, except under the state laws in connection with the appropriation of water, exactly as the reclamation officials are now proceeding under the act.

2. There is now no federal control. It is not sufficient to have merely a judicial tribunal to finally pass upon disputed questions of right. There must be an *administrative* tribunal to first *determine and fix* the *order* and *amount* of appropriations of water. That control must be *somewhere*. If there is neither federal nor state administrative control of irrigation waters, *where* does the control reside?

3. That joint control by two or more states is impracticable, but if practicable would hamper the reclamation service more than single state control.

4. That irrigation in practical and economical operation requires appropriation to begin at or near the head of the stream.

5. That every arid or semi-arid state actually receives and utilizes more water from sources within its boundaries than from so-called interstate streams, and hence will receive the most benefit from the doctrine of state control.

To these inquiries counsel make no response, and yet they are obstacles to their claim to abolish state lines.

We also called their attention to and quoted from ten or more congressional acts or instances in which the congress of the United States had recognized, to the fullest extent, the right of state control, citing, also, the action of the interior department and of the Reclamation Service in pursuance thereof, as well as an opinion of one of the assistant attorneys general of the United States in support of state control.

The trend of legislation as to the paramount importance of irrigation they do not controvert. On the contrary, counsel for the United States, under the head of "Policy of the Government," not only refer to the same acts, but cite other acts appropriating money for irrigation investigations, the irrigating of Indian reservations, presidential messages and decisions of this court, all tending to show that the policy of the government in every department is fixed beyond recall as to the general scheme of irrigation of the arid West.

And it is not to be overlooked that nowhere in these new citations or references by them is there the slightest intimation against state control, except where it interfered with navigation, the control of which (within certain bounds) is committed to congress by the Constitution. Counsel apparently agree with us, also, that the Elephant Butte case (174 U. S., 690) is not now in harmony with the irrigation policy more recently adopted by congress, and that this court would not now decide as it did then.

It is only when they come to the question of who does and shall *control* the water used for beneficial purposes that counsel for the United States part company with us, and, on page 182, assert that the doctrine of state control, "if sustained, would prevent the settlement and sale of the arid lands belonging to the United States, and especially those within the watershed of the Arkansas river west of the 99th degree of west longitude."

Surely counsel do not mean all of this. The establishment of this doctrine would be just as much, or more, to the advantage of the settlement and sale of arid public lands in Colorado as in Kansas, and

they seem to have overlooked the fact that all the arid lands of the United States in the Arkansas watershed are *not* within the state of Kansas.

It appears from the report of the interior department on the unappropriated public lands, July 1, 1906, in connection with defendants' drainage map, Exhibit 3, that at that date there were of public lands in the Arkansas river drainage:

In Kansas, approximately.... 147,000 acres
In Colorado, approximately . .5,014,000 acres

The public land area within the watershed of the Arkansas river in Colorado being thirty-four times that in Kansas.

Eliminating from this Colorado area all of the mountainous portion as not agricultural, or subject to irrigation (although some of it is), there is left in Colorado, within the Arkansas drainage, over 4,000,000 acres, and while the public document referred to gives Kansas counties wholly within, or touched by, the Arkansas drainage, an unappropriated agricultural area of 10,666 acres, it is not all within the Arkansas drainage.

But treating it as all within that drainage, it then appears that the area of such unappropriated and irrigable public land in Kansas is utterly insignificant compared with that in Colorado.

Doubtless this comparison will hold good to a greater or less extent between most, or all, of the upper and lower states concerned in the irrigation question.

It seems pertinent here to refer again to the testimony of Mr. Elwood Mead on the subject of federal control. On page 1385 of the record he says:

"The control of irrigation was left to each of the several states by congress, and there has grown up in each of the states its own system of administration. * * * It would be impossible at this date to disturb many of those local practices and administrative regulations without causing a great deal of confusion. * * * It would be a very difficult thing to do. * * *"

Again, on page 1418, he says:

"My objection to the federal government's control of irrigation was based on other grounds more particularly than on account of the enormous number of men that would be required to do it and they necessarily unfamiliar with conditions in places where they would be required to act. That is, other reasons were more important, and they are these: * * * that the streams where interference would be required at present, or within a great many years, are comparatively few; that while there are a great many rivers that are interstate streams, there are few rivers where interstate problems are likely to be acute. * * *; so that while apparently there is a large field for federal supervision, when one comes to know the actual conditions, the field is very materially narrowed."

This is principally because the few prior appropriators in the lower states have long and generally acquiesced in the paramount right of the upper one, adjusted their operations accordingly, and are in fact suffering but little, if any.

On page 198 of the United States brief it is stated that the appropriation of the water in Colorado would interfere in the *first instance* with irrigation in Kansas.

The mere fact alone that this may be the first effect is no answer to the doctrine we contend for. The vital question is, Where does the better right lie as between states, and if neither has the better right, then from which doctrine will the greatest ultimate good come to the greatest number?

The statement so often repeated by counsel, and quoted conclusions of the distinguished citizens of southeastern Wyoming (who happen to want unrestricted use of Colorado water), to the effect that state control will seriously injure the Reclamation Service and future and permanent irrigation in Kansas and the lower states, is not borne out by the officers of the Reclamation Service or other disinterested witnesses.

Mr. Newell, after enumerating the projects undertaken by the Reclamation Service, says in reference to the state control doctrine:

"I will say I do not think any of these would be materially affected, because they have been selected largely with that principle in view—that we did not wish to bring into doubt or question the relative state appropriations, but have chosen those where the conditions were such that the physical facts prevent any interference or the raising of that question." (Record, 1274.)

He is also quoted in the United States brief, at page 206, as follows:

"The erection of reservoirs in Colorado to store flood waters in the drainage basin of the Arkansas river would be very advantageous * * * the storage would equalize the flow of the river and the conditions in the Arkansas valley might be improved thereby."

On page 205 it is also stated, with approval, that

"Witnesses for the defendants and for the intervenor testified, in effect, that if irrigation in the upper state were confined to lands within the watershed of the stream, it would be impossible wholly to exhaust the flow thereof in the lower state, and that there would always be enough water in the bed of the stream in said lower state for domestic purposes, etc."

Other witnesses, quoted in the United States brief, on pages 206, 207 and 208, express the same opinion and bear out, to the fullest extent, the claim made by us and the opinion of every practical irrigator, that the economic use of the water for irrigation requires its application first near the head of the stream, and that the effect will be to augment, from year to year, the summer flow of all the streams of the arid region, including the Arkansas river in Kansas.

This seems to us to be an acknowledgment not only of the practicability and necessity of the application of the doctrine of state control, but also to negative the assertion of the United States brief before referred to, and is a virtual acknowledgment of every material fact claimed by the state of Colorado and her co-defendants.

It is not shown that the unappropriated waters of the Arkansas river are more than sufficient at present to water the arid lands within the state of Colorado. Unless that is so, there is no necessity of extending the operations of the Reclamation Act to the arid lands in Kansas. If there should be a surplus of water after such lands in Colorado are supplied, there can be no sort of objection to its application beyond the state of Colorado.

It is admitted by the petition of intervention (Record, 240) that the Reclamation Service has taken no action in the Arkansas valley. It may never do so.

Recurring again to the general effect on the arid public lands of the doctrine we contend for, and the alleged policy of the government for which they contend, they say on page 181 of their brief:

"The doctrine that a state, by reason of its sovereignty, has 'plenary and exclusive right and power to control and regulate the use of non-navigable waters within its boundary,' would * * * to a large extent, *defeat the policy of the government in respect thereto.*"

We look in vain for the citation of a congressional act, or a departmental move, indicating a change of the policy so often announced in the acts referred to, committing this control to the states.

Congress, not the courts, shapes the policy of the United States.

Had we not a right to expect that counsel for the United States would enlighten the court and ourselves on these things, and point out the error, if there be error, in the opinion of the assistant attorney general cited in our original brief, and explain how they can be reconciled with their objection to state control, and their claim to some other sort of control, neither *defined, located, nor named?*

If the true doctrine is not as we claim, it would seem to devolve on counsel to point out a practical plan of administrative procedure, which will afford the Reclamation Service better avenues of progress and enable a prior appropriator in Kansas or else-

where, far from the upper state line, to have substantial and effectual relief.

We have shown that the "policy of the government" in this respect has heretofore been to acknowledge state control, and put the Reclamation Service under state administration.

We have not, in the brief of counsel, been shown that our premises and conclusions were wrong in any respect, as applied to these legislative and departmental acts. Yet we are advised by the quotation that the government has now some other and different "policy" on this subject.

If the governmental policy has changed to such a radical extent as to deny the right of control to the states, the administrative departments do not seem to have been so advised, as they have, ever since the intervening petition was filed (March, 1904), the same as before, continued in all their amended circulars as to the ditches and reservoirs on public land, etc., etc., to require, as a preliminary step, a showing of compliance with the state law. These we have referred to at length in our original brief.

In Farmers' Bulletin No. 263, entitled "Practical Information for Beginners in Irrigation," issued by the Department of Agriculture July 3, 1906, no change of policy is indicated, as it is there said (page 8):

"Before diverting the water from a stream the individual or manager of a company should first seek advice from the proper state officials. In most of the Western commonwealths the appropriation, diversion and distribution of the public waters have been placed under the supervision and control of a state engineer, or a state board of irrigation, with quarters at the

state capital. Information may be obtained from these officials regarding the regulations governing the appropriation and diversion of water, the flow in any particular stream, the volumes which have been appropriated and used, and the balance, if any, which is subject to appropriation."

In 1905 also, in response to urgent request of representative bodies of several of the states, particularly in Washington and Oregon, a draft of a state irrigation code was prepared by the Reclamation Service, as suggestions to those engaged in preparing recommendations to the legislature.

This code appeared in two editions, the last containing improvements made by the Reclamation Service upon the first. So recently as September, 1906, scarcely three months ago, a third edition, with further amendments and improvements, was issued by the Reclamation Service.

In the material parts, hereinafter referred to, these editions were substantially alike, the third and last providing, among other things:

Section 5. For the appointment by the governor of a state engineer, to have "general supervision of the waters of the state, and of the measurement, appropriation, and distribution thereof * * *."

Section 12. Gives him authority to make "rules and regulations to carry into effect the duties imposed upon him by section 5."

Section 14. Authorizes him to "co-operate with the agencies of the United States * * * in the construction of works for the development and *use of the water supply of the state.*"

Section 19. Requires all applicants for the right to the beneficial use of any waters to apply to the

state engineer therefor, giving the data requisite to enable him to act thereon.

Section 22 provides for his approval of such application when in proper form and substance.

Section 36 provides that

"Whenever the proper officers of the United States, authorized by law to construct works for the utilization of waters, *within the state,* shall notify the state engineer that the United States intends to utilize certain specified waters, the waters so described, *and unappropriated* at the date of such notice, shall not be subject to further appropriation under the laws of this state, for a period of three years from the date of said notice, at which time the proper officers of the United States shall file plans for the proposed work in the office of the state engineer for his information, and no adverse claim to the use of the waters required in connection with such plans, initiated subsequent to the date of such notice, shall be recognized under the laws of this state, except as to such amount of the water described in such notice as may be formally released in writing by an officer of the United States thereunto duly authorized. Provided, *that in case of failure to file plans of the proposed work within three years,* as herein required, the waters specified in the notice given by the United States to the state engineer, *shall become public waters, subject to general appropriation.*"

Elaborate details are also set forth as to the management of irrigation enterprises, which are not important here, but nowhere is there any denial of the authority of the engineer, as representing the state, to control the water for beneficial use, nor is there any recognition of any right to the waters of a state

except as the same is acquired under the law as set forth in the code.

It is especially worthy of notice that by section 36, which refers to operations under the reclamation act, the officers of the United States are required to file their plans with the state engineer, which can embrace *unappropriated waters* only, and that unless such plans are filed as therein provided, the waters so sought to be taken by the United States revert *and become public waters, subject to general appropriation.*

The second edition of this code has been adopted without substantial change, in the states of North and South Dakota, and in the territory of Oklahoma; in Oregon, Washington, Montana, New Mexico, and perhaps some other states and territories, the main features were adopted.

This last edition was issued more than two years after the filing of the petition of intervention in this case, in which the judicial department states that the doctrine of state control will "defeat the policy of the government" in respect to the Reclamation Act.

By the adoption of this code, at the request or suggestion of the department of the interior, through the Reclamation Service, these states and territories have assumed control of the waters within their respective boundaries, and in so far as such action can accomplish it, the government is again committed to that doctrine.

Whatever the effect in that direction is, be it much or little, is not so very important. The most important thing is that in pursuance of the suggestion, and no doubt induced thereby, a half dozen or more states and territories have, by their statutes,

taken a position adverse to the contention of counsel for the United States in respect to the control of waters, and in perfect harmony with the action of congress, and the doctrine for which we contend.

In order to uphold the contention of counsel for the United States, this court will have to repeal every act of congress we have referred to, the legislation of ten or more states and territories, and upset most of the plans of the Reclamation Service.

We doubt the inclination or the power of the court to perform the task.

Nowhere, we believe, in all the recorded history of irrigation in this country, prior to the few cases in inferior courts referred to, is there found a line, word or an intimation not in perfect accord with, and in full acknowledgment of, the doctrine of state control.

So, it would really seem that the administrative department of the government is steadily pursuing one line of policy in harmony with the acts of congress, while the judicial department appears to have been derailed, and is endeavoring to pursue another line, totally at variance with every act that congress has heretofore passed, including the provisions of section 8 of the reclamation act:

"That nothing in this act shall be construed as effecting, or intended to effect, or in any way interfere with the *laws of any state, or territory, relating to the control, appropriation, use, or distribution of water used in irrigation,* or any vested rights accrued thereunder; and the secretary of the interior, in carrying out the provisions of this act, *shall proceed in conformity with such laws,* and nothing herein shall in any way affect any right of any state or of the federal government, or of any land owner, appropriator or

user of water in, to, or from, *any interstate stream, or the waters thereof.*"

Surely the court should be informed as to when and by whom the new "policy" was promulgated, if otherwise than by the judicial department.

If we are right in our claim that, necessities in an upper and lower state being equal, the upper state, where the water originates, has the better right, then so long as it has unirrigated lands within it, the reclamation service can better promote the general welfare, do equity and conform to the highest philosophy of irrigation by building its reservoirs in such state.

When, if ever, the demand for water in the upper state is satisfied, the lower state can doubtless be taken care of, if it has not already been supplied by the return flow, which that service concedes is the inevitable result of upper irrigation and storage.

In general, one acre of arid land is as good as another, and until that in the upper state is reclaimed or redeemed, why urge reclamation in the lower one when the obstacles in the way are so numerous and so apparently insurmountable?

There is no room for doubt that in every case where there is water in an upper state in excess of that needed for its own development, such local legislation can be procured as will fully meet all the requirements of the Reclamation Service for its operations in lower states.

But it is really not so very important whether a state be a full fledged nation in respect to the control of its waters so long as congress has so frequently admitted the right of control in that respect, and has not in the Reclamation Act given authority to the Re-

clamation Service to come into an upper state and stop the irrigation and improvement of its lands in order to obtain water for a reservoir in a lower state.

And it does not appear that the officers of the Reclamation Service have regarded that act as giving them any such authority; on the contrary, it seems that they have generally regarded the state control doctrine as one too well grounded to be now overthrown, and admit that if overthrown the result would be disastrous to existing irrigation in the upper states.

If the control of these waters is denied to the upper state, there is no tribunal in existence that can handle it administratively.

VI. The Real Doctrine of State Control and the Paramount Importance of Irrigation.

Finally, we repeat that we have never contended that the right of an arid state to its water extended to wanton waste or use, or was other than the right to control its appropriation and use, or that the words in the Constitution of Colorado dedicating it to the "people of the state" mean to confine its use to citizens of the state, or necessarily within its limits.

What we contend for is that a right to the water in any state must be acquired under the laws of that state, if such right is intended to have protection or to be enforced against other appropriators who have acquired their rights under such laws.

We agree with the doctrine as quoted in brief of the United States (pages 194-196) and announced by the Supreme Court of Wyoming in Willey vs. Decker, that—

"We perceive no reason, if the same be not prohibited by statute, why the owner of lands in another state may not at a point in this state lawfully divert the water of a stream flowing in both states, and conduct such water upon his lands for their irrigation and thereby secure a valid water right."

And by Gibson Clark, former justice of that court (same brief, page 196), that—

"It gives the state the right to control these waters so far as they may be applied to beneficial use."

Nothing short of this will give security or permanency to the users generally. At the same time, we believe that an arid state may, for these purposes, properly control the water, even if it should interfere with navigation, merely nominal in character, in the stream below.

It is difficult to convince those who have never seen it of the enormous value of water when used for irrigation, the wonderful fertility of arid soil, and the marvelous results of such a combination. There is nothing in the humid region that can approach it. Mr. Elwood Mead states that in California irrigated orange orchards, without other improvements, have sold for $1,800 per acre. (1421.) In Colorado pear crops have been sold for $725 per acre on the trees, and peach crops for over $1,000 per acre.

There are thousands of acres of land in Colorado which ten years ago were not considered worth the government price of $1.25 per acre, which now, by the application of water and the planting of fruit, are worth, and sell for, $500 and upwards per acre.

The fertility of this land is kept at the high point by the muddy water depositing the rich silt upon it

every spring, so that artificial fertilizing is little needed. And these fruit farms, many of them, are less than fifteen years old.

A controversy somewhat similar to this is now pending in Australia between the irrigators of the states of New South Wales and Victoria, on the upper reaches of the river Murray and the cities near its mouth, where there is considerable navigation.

In course of the investigation an eminent engineer showed that the revenue from the farm products was many times greater than from the navigation, and said that he believed it would be greatly to the interest of the whole people to devote all the water to irrigation, even if it absolutely prevented navigation and left all the traffic to be handled by the railroads, which were already handling the most of it.

Mr. Newell, as quoted on page 59 of the United States brief, states that the western two-fifths of the United States would be advanced by taking all the waters from the rivers of that region, whether navigable or otherwise, and devoting them to agriculture.

Mr. Mead is quoted in the same brief (page 60) as saying that he places irrigation superior to navigation because of the greater value that can be obtained from the water, and because navigation is decreasing in importance while irrigation is increasing.

It has been stated that all the available iron ore in the United States will be used up in less than fifty years. We know that its consumption is going on at the rate of about 100,000 tons per day. Our coal will last some longer, as there are 18,000 square miles of it in Colorado.

It is said that when these things are gone the thousands of men now employed in connection with

them must turn from the factory to the farm; as the soil is the only renewable form of wealth and the only sure source for the subsistence of the two hundred millions of population due in the next half century.

The arid region, where more than 100,000,000 acres of barren land await the magic touch of water by irrigation, is the land of promise. The soil and the sunshine are there. The destructive rains and drouths of the humid region are not a source of danger, as the farmer, in such quantity and at such time as it is needed, can "make it rain with a spade."

The glory of the steamboat on the Missouri river has departed. We believe that every one familiar with the results of irrigation, whether in or out of the Reclamation Service, will unite in the opinion that if all the water in the Missouri river could be beneficially applied to the arid lands of the United States east of the Continental divide, the results would be infinitely more beneficial to the United States at large, than the navigation on that river is now, or ever will be.

As one of the earliest of the humbler advocates of irrigation by the government, the writer stands for the Reclamation Act and Service as the greatest modern advance in national improvement, for it has been said:

"That although the tomb of Moses is unknown, the traveler of to-day slakes his thirst at the well of Jacob. The gorgeous palaces of the wisest and wealthiest of monarchs, with their cedar and gold and ivory, and even the great temple of Jerusalem, hallowed by the visible glory of the Deity Himself, are gone; but Solomon's reservoirs are as perfect as ever. Of the magnificent and costly architecture of the Holy City, not one stone is left upon another, but the pool of Bethesda commands the pilgrim's reverence at the

present day. The columns of Persepolis are moldering into dust, but its cistern and aqueduct remain to challenge our admiration. The golden house of Nero is a mass of ruins, but the Aqua Claudia still pours into the city of Rome its limpid stream. The Temple of the Sun, at Tadmor in the wilderness, has fallen, but its fountain sparkles in the rays of the morning as when thousands of worshippers thronged the lofty colonnades. And if any work of this generation shall rise over the deep ocean of time, we may well believe that it will be neither a palace nor a temple, but some vast aqueduct or reservoir; and if any name shall hereafter flash brightest through the mist of antiquity, it will probably be that of the man who in his day sought the happiness of his fellow men and linked his memory to some such work of national utility or benevolence."

This distinction awaits the men (beginning with the president) whose memories are linked to the origin and work of the Reclamation Service.

We protest that we are not actuated alone by self interest in our advocacy of state control; that it is not "Colorado doctrine" alone, but is the doctrine that has been applied in the administrative departments of every arid country in the world, and of every arid and semi-arid state of this country, as well as by the legislative and executive departments of the federal government, and that the latter is committed thereto irrevocably and beyond the jurisdiction of this court to change.

We also believe that it is the only doctrine by and under which the Reclamation Service can live and successfully work out its greatest ends and the greatest good.

DAVID C. BEAMAN,
Solicitor for the The Colorado Fuel and Iron Company.

CASS E. HERRINGTON,
FRED HERRINGTON,
Of Counsel.

DENVER, COLO., November 7, 1906.

FILE COPY.

In the Supreme Court of the United States.

October Term, 1906.

Office Supreme Court
FILED
DEC 20 19
JAMES H. McKE

No. 3. Original.

THE STATE OF KANSAS, COMPLAINANT,

vs.

THE STATE OF COLORADO, ET AL., DEFENDANTS,

THE UNITED STATES OF AMERICA, INTERVENOR.

EVIDENCE OF CITIZENS OF KANSAS AS TO DAMAGES.

N. C. MILLER,
Attorney General of Colorado.

Smith-Brooks Press, Denver.

In the Supreme Court of the United States.

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EVIDENCE OF CITIZENS OF KANSAS AS TO DAMAGES.

After reading the petition and observing the grave charges concerning damages alleged to have been done to the citizens of Kansas as a result of irrigation carried on in the Arkansas valley in Colorado, we naturally expect when we come to read the testimony to find an array of witnesses who are prepared to point out clearly and definitely the damages suf-

fered. We expect to see these witnesses trace their injuries to the effects of irrigation in Colorado. Whatever doubts we may have as to the clearness of the testimony as to cause and effect, we at least expect that there will be no serious conflict of testimony among the citizens of Kansas as to damages suffered.

After taking up the testimony and examining it, we are surprised at the indefiniteness and uncertainty of the opinions of witnesses and the conflicts between them as to cause and effect. Beyond all this, we are surprised to learn that a very large portion of the witnesses assert that no damage is done. For the purpose of making this statement clear, we have gathered from the evidence of witnesses who are citizens of Kansas, a large number of extracts. We can not ascertain any definite method the citizens of Kansas have adopted to investigate and determine the cause of the alleged damage. In making this statement I refer to those who assert that they have been injured. We are surprised to hear a number of these witnesses speak of this suit as a "joke." A large number of witnesses have denied that any injury has resulted from irrigation in Colorado, while on the other hand, we have found a unaminity of opinion that the land values have increased; that the crop yield has increased; that the general condition of the country throughout the course of the river is prosperous, and that cities have grown in population and commercial enterprises have multiplied in number and the wealth of the people in the Arkansas valley has grown immensely.

The total number of witnesses examined by the state of Kansas is 150, seventy of whom were inter-

rogated on the direct and eighty on rebuttal. Of the seventy witnesses examined in the direct, thirty-three were farmers, and of the eighty examined in rebuttal, thirty-five were farmers.

In order to show that this suit was not supported by any general sentiment of the citizens in Kansas, Colorado called a large number of her leading citizens, consisting of bankers and money lenders, farmers, merchants and officeholders to the stand. In all, seventy-two witnesses, citizens of Kansas, were put upon the stand and interrogated as to the conditions along the Arkansas river. Fifty-five of these witnesses were farmers, and their testimony is strong to the effect that irrigation in Colorado produces no damage. Many of the witnesses produced by Kansas, on cross-examination, testified to the increased value of their lands, and that the crop yield is as good now as in years past; that there has been a constant expansion of the agricultural area.

The other seventeen witnesses out of the seventy-two were bankers and business men and persons of large interests along the Arkansas river, and they testified to the general prosperity of the Arkansas valley. Most all of these witnesses were examined as to their knowledge of any complaints having been made concerning damages resulting from irrigation in Colorado and most of them replied that they had not heard of any until this suit was brought.

In and about Wichita there are some exceptions to this statement, under the inspiration of Mr. Rutlidge and Mr. Murdock, the editor of the Wichita "Eagle." There have been one or two meetings called for the purpose of discussing the lowering of the ground water. However, it is shown by the examina-

tion of witnesses, that these meetings were not generally known to the people.

After the introduction of testimony by Colorado, Kansas reopened her case and proceeded to introduce eighty witnesses in rebuttal, covering the same line of inquiry as had been gone into on the direct.

It is not necessary to say that Colorado could have gone down over the same territory a second time and obtained double the number of witnesses she did previously, and herein lies the proof of our objection to the testimony introduced in rebuttal. The witnesses introduced by Colorado in rebuttal were men of the highest character and standing, as will be seen by referring to their business.

We have collected evidence in the order of places situated along the river, beginning with Garden City and proceeding on down to Arkansas City. These extracts cover the question of the values of land, crop yield and climate, irrigation, ditches, complaints and the effects of cultivation upon the climatic conditions of the valley.

I. N. McBETH, Garden City, Kansas.

VALUE.

As to what we regard as the value of lands under irrigation in this county where they have a reasonable amount of water for irrigation, I would say, I suppose in the neighborhood of $40. Compared with the lands not under irrigation, I would answer, lands not irrigated sell from probably $3 to $5, that is, the high or flat lands. (Folio 7099.)

IRRIGATION.

Yes, sir, we are strongly in favor of irrigation here. We are in favor of the use of the water of the Arkansas river for the irrigation of lands in Finney county, yes, sir, and in other places where it can be put to beneficial use. I should say so. Yes, we would be in favor of using all of the water of the river economically for the purposes of irrigation if necessary. Yes, I think that is about the best use it could be put to. We would not need so many dikes on the lower Mississippi then, probably. (Folio 7100.)

CLIMATE.

In regard to the rainfall for the last two or three years being greater or less than the average prior to that time, I would say two years ago I think it was about as high a year as we have had in several years, and in last year, 1904, it was very dry up to about the 15th of May. In the present year we have had a greater amount of rainfall up to this time than we have had in several years. (Folio 7105.)

DITCHES.

Yes, sir, I know as a matter of fact that the farmers had difficulty to get these non-resident ditch owners to put up the money to keep the ditches in repair. Yes, sir, they had some difficulty, and some of the farmers were compelled to reorganize these companies and did reorganize them in the last three or

four years. I think the farmers own the ditches now. Yes, sir, and as soon as the farmers succeeded to that ownership of these ditches they spent a large amount of money, labor and time in putting the ditches again in repair. They have been working on the ditches and making better repairs. (Folio 7109.)

VALUES.

Values have somewhat increased, you might say, in the last ten or twelve months, and they have increased quite rapidly, yes, sir. Oh, no, I wouldn't say that some of this land has doubled and trebled in price in the last ten or twelve months. In some cases I suppose it has trebled. You take cheap grazing lands up on the flats, I suppose it is true they have doubled. (Folio 7112.)

GEORGE HILL, farmer and stock raiser, Garden City, Kansas.

CROPS.

I came to Kansas in 1871 and was first on the Arkansas river in 1872, and I have been near the river off and on ever since. I came to Kendall to live in the spring of 1879, and have been along the river almost continuously since that time to the present. My residence has been there.

I raise alfalfa and prairie hay and occasionally a patch of rice corn or something of that kind. As to whether those crops are helped any by the water level underneath, I don't see any difference. My crops

have been uniformly good during that time. No, sir, I have never had a failure of crops by reason of the water from underneath not being in sufficient—supply them, nor have I noticed that my crops were any less on account of the rise or fall of the river. (Folio 5589.)

COMPLAINTS.

Yes, sir, I am acquainted with others residing in that vicinity who do farming and have land near the river. There are quite a number of others there who also have crops and raise them in the same way as I do. Everybody around there does. No, sir, I never heard any complaint from any of them to the effect that their crops were injured or affected by the lowering of the water level underneath their land. No, sir, I have never had a failure or diminution of my crops on that account. (Folio 5590.)

No, sir, I have heard no complaint or suggestion that the water level of the wells has been lowered in any way. I never heard that they were raised or lowered by the rise and fall of the river. I have never been troubled with any of my wells in getting a water supply by the rise and fall of the river. As to the conditions east and west from where I am with reference to the wells, I should say it is the same all the way along the river bottom. No, sir, I have never heard any complaint from anyone either east or west who is taking water from these wells on these bottom lands that the level was lower than it formerly was in the earlier years, nor do I know of anyone who has complained of their crops being affected by the falling of the water level underneath the bottom

lands, and with the exception of allowing for the age of alfalfa, which will, as it gets older, without irrigation, necessarily grow shorter, perhaps, the crops in that vicinity are as good as they were in earlier years. That is my observation. And they are not affected by the water levels, no, sir. (Folio 5598.)

GROUND WATER.

The next well I dug was where I am living now. I moved to another piece of land, or rather onto higher ground, and that perhaps is about three hundred yards from the second well I dug, and I went about four feet to water. I think that was in 1891. And I am still using that well. I dug it the same as the others—dug to the water and then drove a pipe. The well was about three or four feet across down to the water level, and I have used that for household purposes throughout the year and am still using it. (Folio 5594.) The water in that well has practically remained the same and is the same to-day, yes, sir. Yes, sir, I dug another well about forty rods north of where I am living now, or the well we just spoke of, on the same land, and I went about six feet for water and constructed it the same as the others. That was three years ago. That was in constant use until last winter. Yes, sir, I noticed from time to time the water level in that well, and there was no change that I could notice. It remained practically the same during those years. (Folio 5595.)

CROPS.

I have raised prairie hay, sorghum, rice corn, kaffir corn and stuff like that in addition to alfalfa upon this bottom land, and these crops are generally raised upon the other farms there in that vicinity, and during all of the years I have lived there I have never had a failure, and that has been my experience since I originally located there. (Folio 5607.) This rice corn I spoke of is a species of sorghum, only it makes a larger head and a better corn, and it is cultivated like corn. This has also been raised by me on this bottom land, and by others in that vicinity.

COMPLAINT.

No, sir, I have never heard any complaint about that crop being affected by the falling of the water level in the valley, because we depend entirely upon the rain to raise it, because we can't irrigate it. Yes, we also raise kaffir corn and sorghum on this same bottom land, and I have never figured that I was ever affected by the falling of the water level underneath the land There were none of the other farmers affected so far as I know, no sir.

W. McD. ROWAN, assessor, Garden City, Kansas.

LAND VALUES.

Yes, sir, these farming lands are higher now than they were five years ago, but they are very little higher than they were twelve years ago. It has all

been done in the last twelve months, is what I want to get at. Yes, and that is true of these outlying lands. It is the general effect all over the county. No, sir, I don't think these outlying lands have more than doubled in salable value in the last two or three years. No, sir, I don't think they have doubled in the last year, and as to whether I know of sales in this county to have been made at double the amount asked for those lands a year ago, I would say, there possibly may have been. I have heard of such sales, but they are something that I have paid very little attention to. It has been out of my line of business. As to the fact that lands in this county are as high now as they ever have been in the history of the county outside of the period of boom years, that may possibly be true. I think it is true, yes, sir, I believe it to be true. (Folio 6996.)

IRRIGATION.

Yes, sir, our experience has shown that irrigation is necessary ordinarily to the growing of general crops in Finney county, and that only a few crops can be grown on these uplands, and they are not of very much value and the crop is not very reliable. Yes, sir, so far as the question of irrigation is concerned, I, in common with the people of Finney county, am in favor of using the waters of the Arkansas river for irrigation purposes; but as to the general sentiment and general wish of the people of this county, I can only speak for myself. Yes, sir, I have talked with others a great deal in regard to this matter, having held an official position in this county for

some time, and this is true so far as I know. If the objects and purposes of this suit are to require the people to keep the water in the Arkansas river and not take it out for irrigation, as to whether this suit would meet with the approval generally of the people of this county, I would say (objection), why, no, sir, of course it wouldn't, if that was the purpose of the suit. Such a doctrine would be absolutely destructive of the best material interests of Finney county and the country west of the 100th meridian. (Objection.) Why, certainly. (Folio 6993.)

F. L. PIERCE, stock raiser and farmer, Garden City, Kansas.

CROPS.

In the early days the stock ran on the open range and tramped it over and ran over the whole country. At the present time these large prairies are fenced in large pastures, with wind mills all over the country. Small bunches of cattle are kept all through here. (Folio 1706.) I expect there is more cattle kept in western Kansas to-day, west of Dodge City, than there was in 1879. They farm the upland now in my neighborhood and raise the best wheat, oats and barley that is raised in the country, without irrigation. They use irrigation some in the valleys. (Folio 1707.) They raise these crops without irrigation clear through on the uplands, and they have been doing that at least ten years. I think there is less acreage of upland under cultivation now than formerly. Fifteen years ago every quarter section of

that county on the north side of the river was taken up by settlers. They broke up small pieces and went in with good heart to raise crops. They were not successful and abandoned the country. They couldn't raise crops because of the small amount of rainfall. Some stuck to the country and have raised crops. They have farmed year after year and have raised good crops, but not a sure crop. They get a crop oftener than they did in the early years. (Folio 1708.)

CLIMATE.

This must be because of more rainfall; that is, our rains are different now than twenty years ago, better distributed throughout the season. I attribute this to the settlement and improvement all along the valley. The irrigation of large tracts of land in Colorado may have tended to equalize the rainfall here. After those first people settled some fifteen years ago the land returned to its wild condition. (Folio 1709.) I saw that country settled and depopulated three different times. In 1879 the whole country about Lakin was taken up, and they went away in 1880 and 1882 and 1883. In 1886 the settlers again came in there and made another effort and were driven out by dry weather. In 1889 again settlers came north of the river. In 1887 the two crops of settlers that had been here before had practically all gone out. (Folio 1710.) Again, in 1889 and 1890, they all left, with the exception of a very few. They are not there now. There are only a very few people there that amount to anything. In our two northern voting precincts

of Kearney county the voting population, I believe, is only about fourteen. (Folio 1710.)

If these people went away in 1880, the cause was not the excessive diversion of water from the Arkansas river in Colorado, for it is claimed the Colorado ditches were nearly all built after 1889.

JAMES CRAIG, farmer, Garden City, Kansas.

CLIMATE.

As to whether or not there has been less rain or snow fall in the late years, I would say that there has not at this point. I don't know how it has been in the mountains of Colorado. (Folio 1973.)

Yes, sir, the soil would absorb the moisture, and when you break or plough ground up the rain which falls on it furnishes a much less percentage of run-off than when falling on the native sod. It runs off more readily when it is not under cultivation. No, I don't know whether or not it is true that in all this western country that is open range both on the plains or in the mountains the grass or vegetation has been trampled off or eaten off by cattle so that it is much less than it formerly was when the country was new. (Folio 1974.)

IRRIGATION.

As to the fact that these ditches of which I have spoken as having had ample water for the first few years after they were constructed, and that later they had not been so well supplied with water, I should

think it is true as you state that it was not entirely due to the lack of water, but in part due to the fact that they were not kept in proper repair or looked after while they were in the hands of a receiver. (Folio 1975.)

CLIMATE.

Answering your question as to whether or not the spreading of water over the lands in eastern Colorado for irrigation purposes has had any effect on the climatic conditions in western Kansas or any effect on the rainfall, I would say I have kept a record here for eighteen years and I don't see any difference. Sometimes it goes to the maximum and then down to the minimum. I have seen no change in the last twenty-five years. (Folio 1977.)

J. L. DUSEN, farmer, Garden City, Kansas.

IRRIGATION WANTED.

What I would like to have is more water for irrigation. This would be to the benefit of this section of the State, in my judgment, and it is what all the people here want. I hope to get more water for irrigation as the result of this suit. (Folio 1866.)

GEORGE H. REESE, farmer, Garden City, Kansas.

VALUES.

I know something about the assessed valuation of land in this county. (Folio 1779.) The assessed

valuation has not been changing very much in this county in recent years. Land has advanced here, but nothing compared with some parts of the State, and the ranch and grazing land has advanced in proportion a great deal more than lands along this bottom—than the farming lands along the ditches. But the bottom lands have advanced somewhat. I don't know of any land in this locality that has declined, and nowhere else. Lands have advanced generally, I think, all over the country. (Folio 1780.)

EARLIE OVERTON, Garden City, Kansas.

I am a stock raiser, and a farmer to the extent that we raise "roughness" for cattle. By that I mean cane and kaffir corn mostly, and I have been raising this roughness about fifteen years, and upon the same land without rotating or fertilizing. As to whether that would tend to account for the diminution in crops I would say on that land I don't see that there is any difference. I think it is about the same. As to whether it is—recognized fact among the farmers that it is necesary to rotate crops or rest the land or fertilize it or do something to keep its productiveness up, I would answer it might be better. We never pay much attention to it, though. Yes, sir, I know it is a recognized fact that it is necessary to either rest the land or ferilize it. (Folio 7070.)

Dodge City, Kansas, June 1-3, 1905.

L. J. PETTIJOHN, Dodge City, Kansas. (Folio 7114.)

WIDTH OF RIVER.

I am the same witness who was called and testified on behalf of the State of Kansas in this case—its testimony in chief—and am receiver of the land office at Dodge City. As such receiver I have the records of that office in my possession. Yes, sir, I referred in my former testimony to the width of the Arkansas river at different places. I have since that time reduced to figures the widths of the Arkansas river at the points near Dodge City. The width of the Arkansas river in feet at Dodge City, as shown by the records in my office (objection) is 1,528 feet; at Syracuse the width is 1,160 feet; at Garden City, 1,181 feet; at Kinsley, 1,904 feet. This width at Kinsley is two miles south of the town, on the section line between 16 and 17, township 25, range 19. At Great Bend the width is 1,584 feet; at Larned, 1,486 feet. (Folio 7115.)

I take these figures from the plats in the office, and this width is the width of the river as shown by the records; that is, the width from one bank to the other as shown by the records of the land office, in chains. No, sir, I don't know the date when those measurements were taken. I have been in the land office for seven years, and they were not taken since I have been in that office. The plat which indicates these figures was filed in the '70s. I don't remember the year. And so far as I know the figures were put on the plat then, yes, sir. Yes, the width of the river

here is 1,528 feet. That point is located just south of the town, on the section line east, and that distance is from bank to bank as shown by the records. (Folio 7116.)

No, sir, I don't know whether the bank now corresponds with the record or not. (Folio 7117.)

H. JUNEAU, hardware and lumber merchant, Dodge City, Kansas. (Folio 5752.)

I live at Dodge City, and have lived here since some time in September, 1885, and I first became acquainted with the Arkansas river in Kansas in 1876 at Wichita, about the middle of August. In August, September and October of 1876 the middle of the river was dry. There were two little streams on both sides that you could step over. It was not over a foot deep at any place. There was quite a gully on each side right at the west bridge.

I have been in Dodge City since 1885, and have been engaged in the lumber and hardware business during all of that time, and am still engaged in that business, and have a large lumber yard here. (Folio 5755.) There is only one other yard here, and I have been steadily engaged in this business since 1877, and here since 1885. Yes, sir, the ground where my yard is is owned by myself. My business has brought me into dealing with the farmers throughout Ford county and a portion of the adjoining counties pretty much, yes, sir. (Folio 5756.)

CROPS.

Yes, as a matter of fact, while we had a shortage of rain last year as well as a shortage of crops, the

river ran rather a better stream during 1904 than it has in many other years. After the middle of May we had ample water in the river, and we had ample rain after the middle of May, but it was too late for our crops. Our crops were winter-killed. That is the way it is. Excluding any one year, as to the productiveness of first bottom lands in this locality now, as compared with the country when I first knew it, I would say I think it is a better average, and I draw my conclusion from the observation of the country, yes, sir. Now, the country was practically depopulated, you know, in 1888, by reason of the tremendous drouth and hot winds, and the failure last year wasn't anywhere near what it was in 1888. (Folio 5757.)

VALUE.

As to the prices of land, it is safe to say that the values are not less than fifty per cent. more now than what— No, sir, the lands in this locality, including all classes—bottom lands and uplands—never have been any more valuable, on an average, than they are now.

COMPLAINT.

No, sir, before the commencement of this suit, I never heard any complaint from the farmers with whom I dealt that the general water level of the country had been lowered. I never heard any complaint of that kind.

GROUND WATER.

As to my having had occasion to observe anywhere on the first bottoms in this vicinity the water level so as to state how that level compares this year with what it was say fifteen or twenty years ago, I will say that I have had good opportunity to observe that, because this well here was the first thing I put in; that is, the well in front of my office, right here, yes, sir, and we dug down about six feet and we got to the point where the earth was sticky, and then we drove from there. (Folio 5758.) The object in driving down there and forming this tube was to put in an anti-frost pump, and we dug down six feet so as to get the cement below the frost line. It made an open well for that distance, yes, sir, and it was up to the top of the level of this underflow at that time. And to my observation, the level of the ground water for the last two or three years is precisely the same as it was when I first sank that well, and that will be twenty years next September. No, this well is not on what is known as first bottom land. This is really second bottom land. The first bottom would be behind that fence. I should think that it is about two to three feet above the first bottom. (Folio 5759.) This well is about 700 to 800 feet from the river. Yes, sir, during this period of twenty years that this well has been down I have had occasion to look into it from time to time, and taking it by periods of years, one year with another, I haven't noticed any general lowering of the water level or rising of it.

FLOW.

Yes, sir, I came here in 1876, and as to the flow of the river in recent years compared with the flow in the earlier years, taking it over a period of enough years to make allowance for any peculiar conditions, I would say, for instance, in 1877 I had a shop on the land adjoining the Manhattan hotel in Wichita. My shop was about two feet high from the ground, and the water came in and covered the floor of my shop about six inches. That was in May, 1877. The following September the river was dry. That shows the two extremes in one year, you understand. I should think that the flow now is more even, if anything, than what it was in the earlier years, but in the earlier years we were more liable to floods and violent extremes, both in storms and in the rise of the river. (Folio 5763.) But taking it as a river for practical purposes at this point, in my judgment it is as good a river now as it was when I first knew it. I believe it is.

COMPLAINT.

As to my having heard any complaint in my dealings with the farmers of this county and locality before the commencement of this suit, that their land was lessening in value or production by reason of the lowering of the ground water or the failure of the flow in the river, I would say I never heard a complaint of that kind.

IRRIGATION-FLOW, PROSPERITY.

Yes, they would have had water in the ditches this year if they ran them, and they would have had every year in the spring of the year when these floods come down. At other times in the year there never was water to pay. I tell you that I saw the river perfectly dry at Wichita twenty-eight years ago. (Folio 5789.) You could play marbles in the center of it. As to whether when these ditches were dug there was a prospect of ever getting water enough to operate them, I will say no, there was not, as a matter of fact. There wasn't to operate them the year round, because there was never any water in the river the year round. Never. You come here in August, September or October and you will see a dry river, but no more so than twenty years ago. That is the point I want to make. Yes, sir, there was a dry river here in September, 1904, so that you could see the center of the river. There was more water, though, in the fall last year than the fall before. That is true. But you could see the sand, and there was no water on the top of the sand in the center of the river. There was water on each side, yes, sir. No, when the parties dug these ditches in western Kansas there was no prospect of getting water to operate them the year round. They might have figured it that they would get sufficient water to operate the ditches for the purposes of irrigation when it was needed, but they certainly didn't get it. (Folio 5790.) Yes, they got water through the floods of the spring and preserved it in lakes. There were eighty odd lakes covering from one to ten or fifteen acres, and they took the spring flood, for in-

stance, and put it into those lakes. Yes, the ditches of western Kansas got their supply of water from the floods. They might have figured that they had a prospect of getting sufficient water to operate those ditches when they needed it, but they certainly misfigured, for they never did have. Oh, yes, they operated them, but not to the satisfaction of those who would pay for the water, because they couldn't get the water when they wanted it. No, sir, they didn't have water enough to operate them for a number of years, only for a part of the time during perhaps two or three or four years. No, they operated them part of the time during the year, but not when the water was wanted. As to the ditches I refer to, I have reference to the Soule ditch here. As to the other ditches in western Kansas, I don't know anything about the others. I am speaking of the Soule ditch right here. Yes, it would be an advantage to this county to have that ditch operated. That part is all right. But how are you going to get the water? (Folio 5791.)

Farming is more profitably conducted in this county now than it was when I came here. There is a better class of farmers, and those that stayed here are all in splendid shape. They are out of debt. Oh, yes, good farming will bring better crops anywhere, and better crops bring a rise in the price of land. Yes, our town has been built up here in the last number of years, and it has had its influence on the price of land and the settling of the country. *The town depends upon the country.* (Folio 5792.) Yes, there has been a general development all through this country regardless of the condition of the Arkansas river. No, sir, if the Arkansas river could be kept more perma-

nent and would have water in it, it wouldn't be of any advantage to this country. It would be infinitely better for that water to be held west of us and be utilized. Utilizing some of it in the Soule ditch would be simply a small area. It wouldn't cover perhaps over ten or twelve thousand acres. Oh, yes, if we could irrigate ten or twelve thousand acres of land in this and adjoining counties, it would be of value, or course, but we have passed the line of irrigation here. We don't need it. I don't think it would be a particle of value to irrigate our land here, because the last three years we had enough rain to raise a crop. (Folio 5793.) If the people of Colorado are allowed to use this water and the people of western Kansas are allowed to use this water west of us, it is all we ask. If the people of Colorado use all the water then the people of western Kansas don't have to use it. They will have plenty of rain without it. You create equal to an ocean there, and that is what we want, to moisten that dry atmosphere in the West. My belief is it is a great mistake about Kansas suing Colorado. It is a damage to the western part of Kansas. I have so expressed it to our Representative and to others, and I have been prominent in expressing that opinion, because when I believe a thing I stick to it. If they use the water in Colorado they won't have to have ditches in western Kansas. No, they haven't used it all in Colorado for the last ten years, because we have had water in the river right along here. We have had it in floods right along. I think between here and the state line we have lost half a dozen bridges last year on account of the water. Let the people of Colorado just take care of that flood water. Let them fill their land and make an ocean

of it there. Yes, they had some heavy floods up there last year. They will have to let go of that water, you know; they can't hold it there. (Folio 5794.)

CLIMATE.

If the testimony in this case shows that outside of the flood season they do take it all and then don't get enough for the ditches in Colorado, as to how Kansas is going to get any water to supply her ditches, I will say from the evaporation of a large area of land. It will be equal to an ocean there or a lake. That is the way to reclaim the arid desert, is the depository of water sufficient to moisten the atmosphere to have rain regularly. The rainfall is heavier here and has increased in western Kansas. That is to say, it may not perhaps—our rainfall here—well, we are not too far. We are influenced by that same irrigation west of us. I don't think the rainfall has increased much in inches, but it comes in a different shape. For instance, a rainfall of an inch and a half, that will be two or three days coming down, whereas in the early days the same amount of water perhaps twice over would come down in two or three hours, and instead of doing any good would cause our fields to be as hard as the road, practically. Our climate is different. We have always had enough water here; it is simply that the water should come down more evenly and not in one bunch, for instance like a cloudburst. (Folio 5795.)

JOHN D. SIDLOW, farmer, Dodge City, Kansas.

FLOW.

Well, I don't think there has been very much change as to the flow of the river, say during the last three years, as compared with the general conditions during those earlier years. I don't think there has been quite as much water coming down as there was in—that is, the high water wouldn't last as long as it would in some of the former years. I have seen it several times when the stream was entirely stopped running in those earlier years, but within the last three years I have not noticed it. I have crossed it frequently, but haven't noticed but what there was a small stream running. Yes, sir, there has been a good flow of water during the last three years. (Folio 5657.)

CROPS.

Yes, I am well acquainted with the lands in this vicinity along the Arkansas river, and in those earlier days there was a great deal of grass land along the river, and there is considerable, yes, sir. I think the production of those grass lands along the first bottoms in the earlier years was about the same as now; and as to the second bottoms, well, I think the grass land on the second bottom has increased, and I account for that—for one reason, I suppose they haven't been grazed so closely, and the fires haven't run over them so much, and that blue-stem is taking hold. There hasn't been any perceptible change that

I can see in the production of the grass lands along the first bottoms between those years and now. (Folio 5658.)

SOLDIERS' HOME.

Yes, sir, I was connected with the Fort Dodge Soldiers' Home for a while as quartermaster. I think I went there in that capacity in 1893 and was there a little over five years. Yes, sir, they have some grass lands on the border of the river there belonging to the Soldiers' Home, and I was well acquainted with the production of those grass lands. Yes, sir, I saw those lands before I went there as quartermaster; and I should think that the grass lands that we used at the fort there some years were used as grazing lands, so that I could hardly compare it. There was a good growth of hay there. There was always a good cutting of hay on those lands, and that was true all the time I was there. (Folio 5659.) No, sir, I never heard of those grass lands being rendered less productive because the water level had fallen. Nothing of that kind, no, sir. No, I don't know what the production of those grass lands has been during the last three or four years, of my own personal knowledge, only have noticed in passing by that they have put up about the usual amount of hay there, but I have no knowledge of just what is—— I should judge that there was in the neighborhood of fifty or sixty acres of grass lands that were mowed over there when I got there. They raise alfalfa there also, yes, sir. The alfalfa land is on a bench that runs up to the river. It is not really the first bottom; it is right next to the river, but it is higher land than the wild hay land is.

And they had good alfalfa there during the time when I was there, all the time, yes, sir. I think the alfalfa was sowed the year before I went there, and I think it has continued good up to this time. Part of it has been fenced into hog lots, I notice, and the hogs have destroyed it to a certain extent. (Folio 5660.)

No, sir, I don't remember hearing any complaint or any suggestions that the alfalfa lands have deteriorated on account of the water level being lower, and I think the crops produced there to-day are just as good as they ever were.

VALUE—COMPLAINT.

As to the value of the lands of the Soldiers' Home at the present time, or say during the last six or seven years, as compared with those earlier days, I would say that the market value is very much more than it used to be, and that includes the grass lands. Yes, generally, the land out there is just as high now as even in the boom days. I don't remember of ever hearing any complaint by the farmers down there through that section of the country or along on the lands bordering on the stream along the river on either side of Fort Dodge that their hay or alfalfa lands or the crops on any of their lands had been hurt or affected by the lowering of the water level. (Folio 5661.)

My experience is that the second bottom land is better for alfalfa, and I account for that as a general thing for the reason that the first bottom land is too close to the water and when the water is up it appears to rot the roots. That is, the roots get into the water

too soon, and it doesn't make as good a crop as where the land is higher and the roots have to go farther for water. (Folio 5662.)

FLOW.

As to the flow of the water for the last three years as compared with those earlier years, I think the flow of the last three years has been a little greater than it was in the earlier years. It averaged better, taking the years through, than in the years preceding.

CROPS.

Well, it is a pretty hard matter to determine how much hay those grass lands in the early days would produce per acre, but I think so far as the quantity is concerned that we raised in the earlier times that it was about the same as at present. I can't say that I notice any difference.

As to alfalfa land, I have cut alfalfa down there, yes, sir, and as to the comparison between the earlier and the later years, I think the conditions are just about the same now as they were in former times. And I think as good crops are raised there now as in those earlier days, yes, sir. (Folio 5684.)

I am well acquainted with the bottom lands and the second bottom lands that border on the Arkansas river east of Dodge City, but am not so well acquainted with the land west. I have been west and I have some knowledge of that land, too, but am more particularly acquainted with the land east, and I think that the production per acre in the earlier years

as compared with subsequent years and up to the present time is about the same. I guess there is a difference in different years, owing to the season, but barring drouths and grasshoppers, and speaking now on an average, I don't notice any material difference. (Folio 5685.)

Yes, there is a great deal more alfalfa raised now than ever before, because there is a greater acreage now. They ordinarily produce three to four crops of alfalfa here per year, and usually when the grass lands are changed to alfalfa lands it makes them more valuable and they derive a greater income from alfalfa land.

WILLIAM J. SPENCER, quartermaster at Soldiers' Home, Dodge City, Kansas.

As to my having ever heard any complaint at the Soldiers' Home to the effect that the crop of hay on that land had ever been affected by the rise or fall of the water level, I would say that I have by a rise, yes, sir, but not by a fall. No, sir, I never heard of any injurious effect from the fall of the water level. The water rose and took away our hay stack once. Yes, sir, it got over the land. I never heard it talked that there was any injurious effect to this hay land on account of the fall of the water level, and as to whether or not in the thirty-seven years I have lived here I have ever heard of any lands or crops being injured on the bottom lands or second bottom lands by the fall of the water level, I would say no, sir. (Folio 5726.) What little crops we are using at the Soldiers' Home down there I guess have been just about the same as always. If anything, a little better. The land down there to-

day is worth more than it was formerly—more than I ever knew of its being worth. Yes, sir, the Soldiers' Home where I am quartermaster now is the Soldiers' Home that belongs to the state and is located five or six miles east of Dodge City and borders on the Arkansas river. That is the same land that was laid out and called Fort Dodge in the '60s. Folio 5757.)

CHAS. E. ARGABRIGHT, merchant, Dodge City.

VALUE.

The value of lands at the present time is greater than it was in the earlier years. There have been times since I first came here when the value was less, but it has been increasing the last few years, and the value is higher now than it has been at any time since I have known these lands. Yes, there was one time during the boom when it reached about the same height as at the present time. (Objection.) I don't remember at any time since I first came here when the values were any higher than they were when I came here in 1885 until the present time. Yes, sir, so far as my knowledge extends the values are higher now than they have ever been before, and that takes in bottom lands, second bottom lands and the uplands. All values are higher now than they have ever been since I have been in the country. The value of alfalfa bottom lands along the river in the vicinity of Dodge City runs from $50 to $100 an acre where it is well set in alfalfa. I am not so well acquainted with the value on the second bottom, but I think they are asking from about $25 to $40 an acre for it. (Folio 5686.)

COMPLAINT.

As to whether I have ever heard any complaint from any of the farmers or among the people where I was down there in that part of the country to the effect that the crops or what was growing on the land was being badly affected by the lowering of the water level, I would say, no, sir, I never heard any complaint. (Folio 5687.)

Yes, sir, I am engaged in the grocery business, and in that business I come in contact with a great many people and with farmers in this vicinity, and in a general way I have had conversations with them in reference to their lands, etc. Not particularly. No, sir, I never heard any of them suggest anything of that kind—that the lands were badly affected because the water level was lower—nor have I heard it from any other source.

If it be the purpose of the present suit on the part of Kansas to prevent anyone from taking water from the Arkansas river for irrigation either in Kansas or Colorado, as to whether the establishment of such a doctrine as that would be of advantage or would be a detriment to the citizens of this county (objection), I would say I think it would be a disadvantage. And as one of the citizens of the state of Kansas, interested in the welfare of this community and county, as to whether I would be in favor of the establishment of a doctrine which should prevent the taking of water from the river for irrigation (objection), I would say I would not be in favor of it. (Folio 5688.)

GROUND WATER.

I said once before I couldn't notice any difference in the underflow in digging a well back where I was. It was six or seven feet to the water, one year with another. They call it an underflow, but I don't know whether it is an underflow or not. I mean the sheet of water that we strike all along the river bottom. That seems to be the general term here for it, but I don't know whether it has any current at all or not. I suppose it comes with the river and falls with the land. I know in digging a well there the water comes in all around. It doesn't come in veins like on the upland in a good many places. You dig down until you strike quicksand and the water seems to rush in from all sides. I couldn't notice any difference where I lived—that the underflow was higher after the river had been up than it was after the river had been down for a long time. No, I never noticed it, but I am satisfied it would be, near the river. Of course it would percolate or seep back for that distance. (Folio 5712.)

FLOW.

As to the river having been dry for a greater number of years from 1890 down to 1903 than during the same number of years prior to 1890 (objection), I will say I was not here as many years before 1890. I think the average flow for the five years following 1890 was about the same as for the five years prior to 1890. (Folio 5703.)

DITCH.

Yes, in 1889 we lost interest and abandoned the work on the ditch and nobody took hold of the project, and that was the reason they didn't keep the ditch up for the five years after. I presume they were afraid it would be a repetition of what had occurred before. It was quite an expense to operate it. Yes, during the years 1890, 1891, 1892 and 1893 there would have been water enough in the river to make that ditch a success. I don't know whether there was a continuous flow all those years, but there was water enough, I think, to have made the ditch a success at all times. There might have been periods when the river was dry during that time. I can't say now. I don't remember. But there was enough water to make the ditch a success. Yes, I think they abandoned that ditch simply because there was a dry time in one particular year, and the fact remains that they didn't resume operation the next year. That is all I know. (Folio 5704.)

VALUE.

As to the value of land being greater now than it used to be, they seem to be getting better crops the last year or so. One thing that is making it increase faster the last year than any other time is, I presume, the precipitation. Land values seem to be going up all over the country. These things occur at different periods—depressions and rises in land values. (Folio 5708.)

JOHN RINEY, farmer, Dodge City.

VALUE.

As to the value of my lands having increased during the last two or three or four years, I would say I expect it has increased. Yes, sir, my lands are more valuable now than they have been in the past. Yes, right now they are of more value, and I hold them higher than at any other time since I located there. I always cut a little hay there, about fifteen or twenty acres, every year, but outside of that I don't cut any, and this year I haven't got any outside of those ten or fifteen acres. That hay is always pretty fair there because it is lower than the balance of it. (Folio 7139.)

CHARLES HERZER, farmer, Dodge City.

VALUE.

I raise alfalfa, kaffir corn, barley and wheat on my lands. As to the value of my land at the present time, I have been offered $25 an acre, and I refused that. I don't want to sell it. As to the market value of my land or of similar lands in this vicinity, there hasn't been much bottom land sold there. I know what the uplands sell for. The farming lands sell for $20 an acre. Yes, sir, I have refused $25 an acre for mine. That offer was made a year ago. Yes, sir, farming lands have increased in value considerably since that time. I guess they have. Yes, sir, my lands are more valuable to-day than they have been at any time since I purchased them. Considerably higher, yes, sir. (Folio 7178.)

CHAS. H. NORTHROPE, undersheriff, Dodge City.

VALUE.

As to the general values of valley lands here around Dodge City, in the valley they are holding lands here at $25 to $100 an acre. The chief crops that are grown on the valley lands here are alfalfa and wild hay. As to how the values of the lands I have mentioned compare with the values of lands previous to 1894, I think you could have bought this same land in about 1894 at from $10 to $50 an acre. No, sir, this is not know as a corn country about Dodge City. I think the corn country begins about fifty miles east of here at about Stafford or St. John. That is quite a corn country down there. (Folio 7226.)

P. H. YOUNG, cattle business, Dodge City.

VALUE.

As to the values of land here now as compared with what they were in the earlier years, I would say they are decidedly better. I guess that would hold good as a whole. Of course they are considerably better than they were during the '90s, but for a period before that they were also higher, and after that. Outside of any boom time the value of farming land, both valley and upland, is better. (Folio 7322.)

H. B. BELL, real estate, Dodge City.

VALUE.

I am in the real estate business, but do not pay very much attention to it. (Folio 1353.) I don't

think farm lands are quite as high on the average as they have been at some times in the past. They are as high except during boom periods. In 1885 and 1886 there was a boom. In 1896 the lands went down to nothing almost. They started up again two or three years ago, I guess, and they have been going up ever since, gradually. The low lands are worth from ten to fifteen dollars an acre. The alfalfa lands are worth the most. Alfalfa is mostly grown on the second bottom. The second bottom is higher than the first. The uplands are worth $4.50 to $5.00 per acre. I think alfalfa lands are worth about $30 an acre—from $20 to $50 an acre—and the native grass lands about $10.00 an acre. Twenty years ago there was not any crops raised or planted. The country has been very successfully farmed of late years—more profitably of late years than before. (Folio 1354.)

SENATE COMMITTEE.

I was a witness before a committee of the United States senate when it visited Dodge City some time in 1889, and perhaps it is true that I said or it was stated at that time that there had been three crops of settlers in here at that time. As I recollect, these people were coming in here in great numbers from time to time endeavoring to raise crops, meeting with failure and going out, and others coming in to take their places. If I could recollect the birth of Garden City I could about tell you when the first crop of settlers came in. (Folio 1218.) I think that was about at its height in 1884. When it started I do not know. It was in the early '80s. At the time they

came in this land was settled upon and homesteaded and pre-empted quite largely. It was nearly all taken up. And these people afterwards moved away. And in the fall of 1889, when this committee of the senate visited this place it looked pretty hopeless here so far as the cultivation of crops was concerned. I have forgotten what the object of the senate committee was, but I remember the senate committee and remember testifying before it, but what the questions were that were asked me I have forgotten. I think Senator Stewart, of Nevada, was one of the members, and Senator Plumb was with them. I don't recollect of them asking me how the sheet of water could be gotten out upon the tillable lands for the purposes of irrigation, but I think, since my memory has been refreshed, that that was part of the subject under discussion at that time. (Folio 1219.) I recollect that various schemes were advanced for bringing this water to the surface, among others that of gathering this water under the river and gradually bringing it to the surface by means of ditches. I think that was discussed. I think the first irrigation ditch in this country was taken out about twenty years ago. (Objection.) That was about 1884. That was the Eureka ditch, if I am not mistaken. (Objection.) It is also called the Soule ditch. I think that was taken out in 1887. They were several years building it. I think they got the water in it in 1887. (Folio 1220.)

ROBERT N. WRIGHT, cattle business, Dodge City.

VALUE.

The values of land here are generally higher than ever before. They have been steadily increasing year

after year for twenty years, with the exception of the fluctuation by reason of booms and their subsidence.

DODGE CITY, KANSAS, May 3, 1905.

R. S. CRANE, real estate, Dodge City, Kansas.

I am thirty-seven years of age, and reside at Dodge City, Kansas, and have lived in this county twenty years last September. (Folio 5609.) I am now engaged in the real estate business in Dodge City, and have lived here twenty years. (Folio 5610.)

CROPS.

Well, of course, in the early years there was not the crops in there is now. The land wasn't in cultivation like it is now, and there wasn't near as much then. Yes, sir, a good many of the lands then were what are called grass lands. Well, comparing those grass lands in the earlier days with the grass lands of the present time, I think the grass lands now are better than they were then. No, sir, I don't know of any grass lands along the river which have fallen off in productiveness in more recent years.

COMPLAINT.

No, sir, I haven't heard any complaint among the farmers or others in this vicinity to the effect that the grass lands have been poorer or worse in these later years than in those earlier ones. (Folio 5612.)

ALFALFA.

Oh, yes, they grow a great deal more alfalfa now than they did formerly. In those former years there was not hardly any in alfalfa. Well, in those first few years, from 1884 up to 1890, there wasn't hardly any in alfalfa that I know of. Of course there might have been some, but I don't know. I think there was a strip of land up here that was in alfalfa, but that is all that I know of.

And take it from 1890 to 1895 as compared with the last five or six years, I think the alfalfa land has increased fifty per cent., and from 1895 to 1900 it has increased right along every year, yes, sir, constantly. Well, I couldn't say as to the productiveness of the land in raising alfalfa, comparing those earlier years with what it is at the present time, but I think it is about the same. Yes, sir, I suppose some years they have had local causes, perhaps, that might have affected the alfalfa crop. A short time ago for one year we had grasshoppers here. As to whether or not the productiveness of these lands along the river is just as great or greater at this time and during the last five or six years as it was during those former times (objection), I would say I think so, yes, sir. (Folio 5613.)

COMPLAINT.

No, sir, I haven't heard any complaint from any of the farmers in this vicinity to the effect that their grass lands are not as good as they were in the earlier years. (Objection.) I haven't heard any complaints. No, sir, I haven't heard any complaints among the

farmers to the effect that the crops are not as good or have been reduced on account of the water level being lowered or anything of that kind. (Objection.) Les, I think these lands raise just as much or are as productive during the last five or six years as they were in those earlier years. I think they are. Yes, sir, I am acquainted with the land values and have been acquainted with the land values along the Arkansas river in this (Ford) county and in reference to the value of lands in those earlier days as compared with the value of lands at the present time (objection), I would say of course in 1886 and 1887, that is, the uplands, I expect they were as high then as they are now. Perhaps higher. (Folio 5614.)

VALUES.

That was during what we call the boom times, yes, sir. I have no idea of the values before 1887. (Folio 5615.) Yes, sir, it is true that after those boom days a great many people moved away from here. The value of lands for the last seven years has been increasing. They have increased, I expect, six hundred per cent.; that is, the uplands, since 1897 or 1898, and the bottom lands have increased also, but not so much. I would say the bottom lands have increased about fifty per cent. That is, steadily rising, since 1898. (Objection.) Yes, sir, and the prices or value of these lands are higher now than at any time since the boom times. (Folio 5616.) I would say that the general average value of bottom hay lands in this vicinity is about $35 an acre, and those same lands about 1897 and 1898 were offered at about $15

or $18 an acre, and of course the second bottom lands were not so high. In 1897 and 1898 the second bottom lands were running about $10 an acre and now they are about $15 to $20 an acre, somewhere in there. As to alfalfa lands on the first bottoms in 1897 and 1898, well, sir, I don't just know. They were so high that we were not able to handle any of them, and they are still higher at the present time, yes, sir. It is hard to place a value on land that is in alfalfa or that is alfalfa land, because when they have a crop it makes so much per acre that you can't hardly put any value on it, but they are of greater value now than in former years, and have increased right along within the last seven years. (Folio 5617.)

R. E. EDWARDS, banker, Kinsley, Kansas.

IRRIGATION.

A. I have always felt that Colorado has a right to take that water. Yes, I have always believed that Colorado had a right to take the water, just the same as I have a right to take it on my land. (Folio 1135.)

ALFALFA.

I consider the alfalfa to be the best crop we raise along these bottom lands in this part of Kansas. I consider it the most profitable for the uses I can put it to. With the breeding of my fine cattle I think my alfalfa is worth more to me than any other crop, because I can't buy it and I can buy corn. Alfalfa has been, with me, on the average, as sure and profitable

a crop as can be raised on the bottom lands in this country. (Folio 1137.)

VALUE.

The value of my bottom lands in Edwards county on the Arkansas river are as high now as they ever have been. They have increased gradually during the last twenty years with the settlement of the country. There has been more or less increase in the last ten years, not only in bottom lands, but all lands—lands everywhere. I think the maximum difference between the high and low water in the river as a rule is not more than three or four feet at the outside. (Folio 1138.)

CLIMATE.

There was hardly a season when there was no water in the river for any very long continued period up to 1885, and we were practically sure of good crops on the first bottom, unless hot winds killed them. Yes, we had hot winds in those days; they are not as severe now as they were. They would kill a growing crop if it was hot enough. (Folio 1119.)

D. D. BAXTER, county clerk, Kinsley.

ALFALFA.

The records filed by the county assessors of Edwards county, show for the year 1896, 4,976 acres of alfalfa and for the year 1904 an acreage of 1,777. (Folio 1174.)

During this same period the wheat acreage increased from 40,024 to 130,165 and the corn from 20,789 to 23,396. (Folio 1175.)

WM. H. VERNON, lawyer and real estate, Kinsley.

CLIMATE.

From my observation it has proved to be a fact that the uplands raise better wheat than the bottoms. I rather think the soil of the bottoms is too sandy. It is not their nature to produce wheat as well as the upland. I think the bottom lands are largely made up of the same sandy constituents that the river itself is. I think at an early date the uplands were so well adapted to wheat because the rainfall at an early day came more in a bunch than it has later. It was not so well distributed during the year. The rainfall of late years has not been distributed throughout the years. (Folio 1195.)

The mere fact that the acreage in alfalfa diminished is not proof of damage. There is not evidence as to the land the alfalfa was sown on. It may have been on the uplands and abandoned in order to raise the more profitable crop of wheat. More than that, the large acreage was in 1896 and 1898 and immediately was abandoned without any cause being given and it is not for us to assume the cause in the absence of any proof.

GEORGE K. LEE, farmer and cattle business, Larned, Kansas.

I live at Burdette, in Pawnee county, Kansas, the same county in which Larned is situated.

Larned is the county seat of Pawnee county. I have lived in this county ever since 1878. (Folio 5804.)

FLOW.

I was first through Kansas here in June, 1877, but I am now living on the Pawnee. That is a tributary of the Arkansas river and flows into the Arkansas in this county. The Pawnee heads away in the western part of Hodgeman county or Gove county or up there somewhere, and it heads and runs throughout its length in the state of Kansas, yes, sir. In 1877, 1878 or 1879 I was on the Arkansas river and saw it only when I was down here at Larned; that is, to speak of. In 1883, 1884 or 1885 I used to drive our cattle down south of the river and hold them there from the first of May to September, and then drive them back. Well, I went down there four or five years. (Folio 5805.) I think about 1883 I used to drive cattle down there for three or four or five years. We used to take all of our cattle down there, and sometimes we found no water in the Arkansas river at all during those years, only in little holes. At other times we would find it pretty nearly bank full. Once we had to put a team and scraper there and scrape out for—I don't know—a couple of weeks. That was between 1885 and 1886. Well, I don't know as I have seen any particular change in the character of the flow of the Arkansas river one year with another. I have seen it when it was dry since then, and have seen it when it was full like it is now or has been for the last few days. (Folio 5806.)

CROPS.

As to the amount of land under cultivation at the present time up on Pawnee creek, where I live, as compared with what was under cultivation when I first settled here (objection), I would say the last ten years of it has produced more than it did the ten years back of that. There is a great deal more land under cultivation there now than twenty years ago.

In regard to the production per acre on the average for the last ten years as compared with that in the first ten years I knew it (objection), I would say the best crop I saw raised, that is, when it was first broke, was in 1878, up in that country. On what few pieces there were broken the wheat was awfully good and made the best yield it has since. But then the drouth struck it in 1879 and we didn't raise anything for a few years, and then it got along again until we raised something. As to the production in the last five or ten years as compared with the average production for the first five or ten years, I would say the last five or ten years there has been a better average than before. (Folio 5807.)

GROUND WATER.

Yes, sir, when I first came to the country a large per cent. of it was in buffalo grass, and of course it would run off from the sod ground more than from the plowed ground. Now, as to whether the water level of the country in my locality has changed since I have lived there, that is, any permanent change (objection), I would say, well, no, sir, I haven't noticed

a bit of variation in our wells, and we are using some of the same wells now that we did twenty years ago. I am not using the same wells, but there are some wells there that are the same as used then. (Folio 5808.)

PROSPERITY—IMMIGRATION.

As to my having occasion to be at Larned or anywhere in the valley of the Arkansas river from year to year for the last twenty years, I would say I am down here to Larned two or three times a month. Larned is situated practically on the Arkansas river, yes, sir, on the north side of it. I used to have a pretty general acquaintance over Pawnee county among the farmers and the people, but there have been so many new-comers in here in the last few years I don't know anyone any more, but among the old timers I have a pretty general acquaintance. No, sir, I have never filled any official position in the county so as to bring me in contact with them, only in our own township. I was trustee up there a few years. (Folio 5809.)

COMPLAINT.

As to my having heard previous to the commencement of this suit any complaint from the farmers or those living in the valley of the Arkansas river in Pawnee county as to the lowering of the water level resulting in injury to the land there, I would say I don't know as I have. I don't know as I have heard complaint either way. I haven't heard anything about it, no, sir.

VALUES.

As to the values of land in Pawnee county at the present time as compared with earlier years, I would say the value is a great deal more now than it was twenty years ago—treble. (Objection.) I don't think there has been any time when the lands, generally speaking, through Pawnee county, and especially in the valley of the Arkansas river, have been any higher or were held at any higher prices than they are now. (Folio 5810.)

T. G. PAYNE, farmer, Larned, Kansas.

I am sixty-eight years of age and live in Larned, Pawnee county. I don't do much business now. I have a farm. I have been a farmer and stock raiser, and I have lived in this locality since 1873. (Folio 5819.)

Yes, that was the first time I became acquainted with the Arkansas river, and I have lived in this locality ever since. I have had from half a section to a section of land in my farms. Yes, sir, I have always had more or less live stock—from a few head to a hundred head or something like that. No, sir, I have not been engaged in any other business enterprises or activities in this county for a number of years. Yes, sir, I have a pretty general acquaintance with the population, especially those who have lived here for a number of years, and that acquaintance has extended, with the old-timers, over a period of thirty years or more. (Folio 5820.)

The land that I owned and farmed is situated close to the Arkansas river. It is the south half of section 34, 21-26, one mile east of Larned, and that

adjoins the river. I still have the lands that adjoin the river, and have been interested in such lands since 1873. I took it up as homestead and timber claims. I operated it and have overseen it myself ever since.

CROPS.

As to the productiveness of that land now compared with what it was in the earlier days, I would say I don't see a great deal of difference. Comparing its production for the last five years with any other five years during that period, I would say we have had the best production in the last five years. (Folio 5821.)

GROUND WATER.

As to the level of the water which underlies the surface of the ground having materially changed during the years I have known the county, I would say it changes every year whenever the river gets high, but as to any permanent change in the last twenty or thirty years, I don't know as there is. So far as I know the level has not changed. (Folio 5822.)

COMPLAINT.

As to my having heard any complaint before the commencement of this suit that the general water level of the country had become lower and the value of lands or their productiveness injured by reason of that fact in this county, I would say that I hadn't heard any such complaint. Confining this answer to

the Arkansas valley alone in this county, as to whether the water level has been lowered and the value of lands or their productiveness has been injured by reason of that fact, I would say no, sir. (Folio 5823.)

CROPS AND VALUES.

Yes, I am somewhat familiar and have been for many years with the lands in the valley of the Arkansas river throughout this county, and the productiveness of those valley lands in Pawnee county are now, taking a period of five years, more productive than they were in the earlier times, and the valley lands of the Arkansas river in Pawnee county are now more valuable than the same lands were in the past. (Folio 5824.)

FLOW.

My land on the Arkansas river was so located that I could see the river practically every day when I was living there, yes, sir, every day or every two or three days. Yes, I suppose I have seen the river on an average once or twice a week, almost, the entire last thirty years, and I can't see much difference in the river now as compared with what it was when I first knew it, in its general flow, taking it over a period of five years.

VALUE.

Yes, sir, there is better farming in this country now than there was thirty years ago, and the country

has greatly developed within the last twenty-five years, and our town has developed and the whole state has developed greatly within that period.

ALFALFA.

As to my land as a body being now as profitable for crops as when it was in wild hay, I would say it is in alfalfa, but if the water gets too close to the surface, within a foot or six inches of it, it is not so good. It would be better, yes, sir, to have it several feet from the surface. (Folio 5833.)

CLIMATE.

I do think the rainfall in this vicinity for the last ten years has exceeded what it was the first ten years I was here. Yes, sir, I think there is a difference in the character of the rains and the way it falls, that is, as to coming more gently and more evenly distributed now in the last ten years, perhaps.

Yes, sir I think there is a greater amount of precipitation during the last ten years than before. I don't know whether the weather reports show that or not, and I don't know that they don't show it. I don't know that it is true that the precipitation comes in a different way now than it did but that the sum-total of the amount of precipitation is not greater. But I think it comes in a different way than it used to. It don't rain so hard and wash the lands like it did, and there are no hot winds, hardly, in the last few years. (Folio 5834.)

PETER SCHNACK, farmer, Larned.

CROPS.

Now, as to whether or not, barring drouths and grasshoppers and hot winds, there has been any change in the productiveness of that land or the amount of corn grown, comparing the earlier years with the later years, I would say that depends altogether on the rain we get in July, about raising corn. In some years we can raise good corn and some years we can't, and if we don't raise good corn it is because we don't get the rain in July when the corn needs it. As to whether those crops of corn are just as good in recent years as they were in earlier years (objection), I should say they were better, because we had plenty of rains in July. Good corn. Yes, when we have rains in July, timely rains, we can raise good corn here. As to whether crops of oats and wheat compare in later years with those of former years, I would say, yes, sir, the same thing is true of them when the season is favorable. It depends all on that—whether the season is favorable. (Folio 5839.)

GROUND WATER.

As to the general water level underneath the soil and back from the river on these adjoining lands making any material change as between the earlier years and later ones, I would say I don't know. I don't think it makes any difference where I live.

COMPLAINT.

No, sir, I have heard no one in that vicinity complain that his crops or land was in any way injured by the lowering of the water level. (Folio 5840.)

VALUE.

As to the value of lands in that vicinity, compared now with earlier years, I would say they are worth a good deal more now than they were then. Land was not worth over from $4 to $9 an acre, that is, railroad land, at that time, and they have been getting higher for the last three years. The price has gone up and up and now it will range from $25 to $40 an acre. I think that is about the highest value we have ever had yet that I know of unless it was for town lots close to Larned, but I was speaking of those lands along the river. (Folio 5840.)

Yes, we had a boom out here for a short time at one time, and we are starting in again now. Yes, our town has improved very greatly in the last three years, and our lands have more than doubled within the last three years and town lots are getting up again. I think there is better farming here in the county now than there was thirty years ago. We have more and better machinery, and we have better farmers. (Folio 5844.)

TREES.

I don't think I saw many trees there in the '70s. But they began along about the '90s, I believe. I saw trees there then, but not sooner.

E. E. FRIZELL, mayor of Larned, Kansas. (Folio 5845.)

I am forty-five years of age, live at Larned, Kansas, and am mayor of the city. This is my second term, and I have lived here in Larned twenty-four years. For the last twenty-three years I have been in the hardware business, implements and machinery, and in the handling of land, farming and live stock, and I consider that I am well acquainted with the land and farmers in this county. I own land myself here. The lands I own at present are located west of here in the Pawnee valley. I formerly owned quite a tract on the Aransas river, of about a thousand acres. That was located along the main line of the Santa Fe Railroad, seven miles southwest of Larned. (Folio 5846.)

CROPS.

The lands have been more productive in the last six or eight years than they formerly were. Comparing the productiveness of these lands for all these crops in later years with those of earlier ones, barring drouths and grasshoppers, I would say the lands have been more productive in the late years, acre for acre, and I am referring to those lands which border upon the Arkansas river in this county, and all of them in the Arkansas valley. (Folio 5848.)

COMPLAINT.

I am fairly well acquainted with the farmers through this county, and as to whether I have ever

heard any complaint from any of the farmers along the Arkansas river in this county as to the water level being lower and that their crops were thereby injured, that is, such complaint before the bringing of this suit, I will say that I don't know that I have ever heard such a complaint. (Folio 5850.)

VALUES.

Lands have increased in value very materially in the past few years. The real increase in value has occurred in the past seven or eight years, and during that time they have gradually increased, yes, sir. There was no time in the past that I know of that these lands have been as high as they are now, and I think that is true along the Arkansas valley in this county. (Folio 5851.)

CLIMATE.

We have had more rainfall in the past few years than we formerly had, and I should say that it gets more even and is better distributed than it was in the earlier days, and that is an advantage to the crops, of course, yes, sir. Even the same amount of rainfall better distributed and falling in a less torrential form will prove of more advantage in the growing of crops. Yes, sir, it will. As to how I would account for that, I had supposed the using of water west of us in eastern Colorado and western Kansas would affect the local rainfall in this part of the state; that is, using that water there for irrigation. I should say we have a more humid atmosphere here than formerly, and as

to the difference in the matter of dews I should say we have more dews and more fog in the mornings than we formerly did. Yes, sir, that is true, that when this country was first settled, or at least when I first came here, there was a great deal of time in the summer when if a man were sleeping out of doors he would practically notice no dew. I have noticed that we now have heavy dews in harvest, so heavy that it interferes with the harvesting of the grain in the early morning, and I should say we don't have as hot winds here as we formerly had. As to accounting for that fact, I had supposed that the breaking up of the lands in the surrounding country and the farming of it more thoroughly and the stopping of prairie fires probably had an influence there. As to the effect the prairie fires formerly had upon the growth of the small timber that would start up along in the river, I would say it would destroy it to a great extent, and since the country has been fully settled up and each quarter section has been looked after by some one, we have had very few prairie fires of late years. There is now a great deal of timber in the Arkansas valley near the river where there was none twenty-five years ago. (Folios 5852 and 5853.)

GROUND WATER.

In regard to those wells that I sank in the valley land in the early days, say 1877 or 1878, I would say that I did have occasion to sink more of those drove wells. Yes, sir, in my business in the selling of pumps and windmills and the making of wells we sank a good many wells. As to taking it over a period of

years, by the sinking of wells or in any other manner, as to whether the water which lies under the surface of the ground in the valley has subsided or materially changed in the last twenty-eight or twenty-nine years, I would say I have never known of it changing. (Folio 5854.)

COMPLAINT.

As to whether I have heard any of the citizens of this country complain, before the commencement of this suit, that by reason of irrigation in Colorado or any other reason the ground water had subsided and thereby made their lands less productive or less valuable, I would say that I don't remember hearing any such complaint. Certainly in my business I come in contact in the course of the year with a large percentage of the farming population in Pawnee county along the Arkansas river.

VALUES

I would say the average value of land in this county along the Arkansas valley would probably be $30 an acre. No, sir, it was not worth that much some fifteen or twenty years ago. I have bought land for the past ten years as low as $4.50 and $5 an acre, and that same land is now worth $30 an acre. Yes, sir, the town of Larned here is improving at this time very rapidly and the values are increasing here in town. It is the increase in farming land values that is building up our town. This town is exclusively dependent upon the farming lands which surround it. (Folio 5855.)

CLIMATE.

The rains have been more evenly distributed of late years. As to what the weather reports show about the amount of precipitation, I am not prepared to answer all these questions. I couldn't say as to the records. From my personal knowledge I know it to be a fact. I should say there were years in the '80s when the rainfall was not half of what we have had during later years. (Folio 5857.)

MRS. EMMA LEASURE, farmer, Larned, Kansas.

Yes, sir, we never lived anywhere else than there. Our house is still located where it was in 1873. (Folio 5885.) We had a good view of the Arkansas river until we planted trees. That was the next spring after we came and when the trees grew to be so large, we couldn't see the river. That was not so very many years, as cottonwoods don't take long to grow. Well, from the east and south of us we could see the river very plainly, but there were other trees grew up so we couldn't see to the west. We couldn't see very well through the trees. (Folio 5886.)

FLOW.

Well, during those years sometimes there was water in the river and sometimes there was not. It was that way every year, as well as I can remember. No, sir, as I remember it was not an unusual occurrence to see it dry now and then. I don't know as it was totally dry. Of course, I didn't see very much of the river—very far—but there would be little pools

and then it would be dry a good part of the time. No, sir, there would be times when there would be no running stream and it would simply leave these holes from place to place in the river. Well, I don't know how frequently I saw it that way. I have seen it that way, though, very often. We wouldn't think very much about it at that time. That was not an unusual condition in those years, no, sir. (Folio 5887.) As to taking those early years and comparing them with more recent years, that is, the last ten years, in regard to the flow of the water in the river, I would say that I don't notice very much difference; and as to the ten years before that compared with the earlier ten years, I never noticed any particular difference in it. Yes, in my opinion, the river flows about the same—has about the same dry periods now—as in those earlier years. So far as I can remember, it is about the same.

CROPS.

Yes, sir, we grew crops on that land in those earlier years, and have ever since, and in comparing those crops in the earlier years with the crops of later years, I should say, it was seasonable. If we had rains we had crops and if we didn't have rains we didn't have crops. (Folio 5888.) And that is the way it has been ever since. If we had rain or hot winds. And if there were no hot winds and we had rain there were crops as well in the later years as in the earlier years; so that the crops produced depended on local conditions of the kind I mention, yes, sir.

COMPLAINT.

Yes, I knew some of the other farming people around there. (Folio 5892.) I knew the farmers generally, and as to whether I have ever heard any complaint that their crops were injured or affected by the lowering of the level of the water underneath the soil, I would say I never heard them say anything about that. They may have said so to others, but I never heard anything of the kind, and I never heard them complain of any injury to their crops, nothing only concerning hot winds and dry weather. Yes, sir, that is all that I ever heard them complain of—that their crops wouldn't be good if they had hot winds, or something of that kind.

WM. H. BRINKMAN, lumber dealer, Larned,

Yes, sir, sometimes I might and other times there might be a month or so that I wouldn't see it, and at other times there might be several days in a month, yes, sir. (Folio 5902.) Yes, when the leaves were off the trees, if the river got high enough, one could stand in the window of most any house around this town and see the river, if you were on the hill here.

FLOW.

Yes, sir, I live on the hill, but I have only lived there sixteen years. From what I have seen and know of the river since 1874, taking it by periods of five years, so as not to get it all in a drouthy year nor in a wet year, and comparing one period with another, I should judge that for the last three years—I haven't

paid so much attention to five years—there was more water went down the river than before that for the twelve months in the year. (Folio 5903.) What I mean to say is that there is more water in twelve months now than there was fifteen years ago in twelve months. Now, as to whether for practical purposes as a river it is as good at this point now for the last three to five years as it was for a similar length of time during the earlier years, I would say there is less dry river in the last fifteen years than before that. The river has not gone dry as often in that length of time. No, sir, I haven't been engaged in farming, myself. (Folio 5904.)

COMPLAINT.

As to whether I ever heard any complaint among my farmer customers along the valley of the Arkansas river, in Pawnee county, that the water level of the county has been lowered and that their lands were being lessened in value and their productiveness lessened, before the commencement of this suit, no sir, I would say I never heard any complaints.

CROPS.

As to the average crops raised in this country now compared with the earlier years, I will say that we have crop periods here, but the crops have been better for the last five years than they were for any five years before, and I think that has been because we have had more rainfall. (Folio 5905.) I have heard it remarked that we have had more general rains in the last two or three years than before that.

VALUE.

As to the values of land now compared with earlier years in the Arkansas valley in Pawnee county, I would say that the price is a good deal higher than it used to be. I have been somewhat familiar with the general values of farm lands in this country for a number of years, and lands have been pretty cheap for the last three years now. The price is rather low, but it is as high now as it was before. I should think they are three times as high now. I say that they used to be cheap. The price used to be low, and now they are high as compared with what they formerly were, yes, sir. No, sir, the highest price they have ever been is right now. (Folio 5906.)

CLIMATE.

Yes, sir, the river went plumb dry in 1874, and perhaps was dry from August, 1874, up to October of the same year. Yes, sir, that was the grasshopper year. The next time I saw the river so dry was in 1878 or 1879. That was the drouth year. Yes, 1879 was the longest dry period I have ever seen in Kansas. (Folio 5908.) The river then went dry in the fall of 1878, and there would be once in a while a little water would come and then it would go dry again.

A. A. THORPE, carpenter, Larned.

CROPS.

Soft wheat makes a different growth from the hard wheat. And when we raised the soft wheat—I

don't know as there is very much difference in the soft wheat. And then when we began to raise the hard wheat—there are a good many more acres now, and it seems to me there is more raised per acre than in the former years. Now, as to whether lands of late years are more or less productive along the valley of the Arkansas river in this county than formerly, I would say that they are better of late years than they were in former years, or as good. (Folio 5923.)

GROUND WATER.

As to whether I have had occasion to observe the level of the ground water in the valley of the Arkansas river in this county, I will say that I have had such experience in putting down wells, is about all, in the early times and in the later days, and from that I think the level of the underflow is about the same.

COMPLAINT.

As to whether in my business or my association with the citizens living along the valley of the Arkansas river in Pawnee county I have ever heard any complaint, before the commencement of this suit, as to the level of the ground water falling or sinking, so that their lands are less valuable or less productive, I would say I have not, no sir.

VALUE.

As to the value of lands in this county in the valley of the Arkansas river, compared for the last two or

three years with what they were in the years before, I would say they are of greater value now.

CLIMATE.

As to the character of the rainfall in later years as compared with former years, it seems to me there has been more rainfall in later years, yes, sir. I think we get more seasonable rains. I don't know as we get any more rains, but we get it in seasons so that it makes the crops better. Of course, I have my own idea as to the cause of this change, and that is, I think it is the cultivation of the southern country and the turning under of the buffalo grass. We have less hot winds and such like now to contend with in this country.

G. L. CHAPMAN, Great Bend.

FARM LOANS.

I represent a company that loans money on farming lands along the river, but the national bank of which I am president don't make any loans on real estate. (Folio 7577.) No, sir, the changed conditions of the river of which I have spoken have never led our company to be any less ready to loan upon the valley lands along the Arkansas river. *That point has never been raised.*

VALUE.

As to the value of farming lands in this county along the valley of the Arkansas river now as

compared with the former period when I knew the land, I can't say there is very much change. That is, the lands have all raised in valuation. I can't say that the land along the river has raised in value more than the uplands. No, sir, they have not depreciated any or gone down along the valley in late years. The valley lands, of course, along the river have always commanded a very good price. No, never any better price than they do now on the open market since I have been here, not that I have any recollection of.

W. B. NORRIS, Great Bend, Kansas.

I live at Raymond, Rice county, Kansas, twenty-one miles from here, and have been living in that county three years. (Folio 5962.) Yes, sir, I lived in Barton county before going to Rice county. I came to Barton county in 1879, and continued to live here up until three years ago.

FLOW.

I have been acquainted with the Arkansas river twenty-five years. (Folio 5963.) At the present time my farm adjoins the river. When I first saw the Arkansas river it was dry. That was in 1880, in the early part, and the point at which I saw it dry was about two miles east of Great Bend. I was along the river near Walnut creek, and when I saw the river then there was actually no running water for five or six miles. Yes, sir, I saw it dry again in the earlier years. From 1880 on, say for ten years, I think it was usually dry outside of flood periods during certain times of the year. They usually had a flood in

June. Yes, sir, I have known the river pretty well for the last few years. When I first it I only saw the river occasionally, but in the last three years I have seen it practically every day, and I have never seen it dry in the last three years. (Folio 5964.)

GROUND WATER.

Yes, sir, I have had occasion to know what is called the ground water or underflow through the valley of the Arkansas river, and as to how the water level of the valley of the Arkansas river in this county and Rice county compares now with the level of the ground water in the same localities when I first came to the country, I should say it is practically the same. (Folio 5965.) The only time there is any change is within a short distance of the river. If the river comes up the water comes up, within a short distance of the river, and when the river is up the water will seep up through the ground, when there is a flood on, but when the river is at its normal stage it is the same level now that it was twenty-five years ago.

CROPS.

As to the farming lands in the valley of the Arkansas river in the part of Barton and Rice counties which I know, as to productiveness, compared now with what they were in the earlier years, I would say they are better. Why, the crops are much better in the last five years compared with any other five-year period previous to that time.

VALUE.

As to the value of land up and down the valley of the Arkansas river in Rice and Barton counties at the present time as compared with what it formerly was, I would say it is higher.

COMPLAINT.

Yes, sir, I had a general acquaintance with the people of Barton county when I lived here, and I know a good many people, and I have an acquaintance in my own locality in Rice county, yes, sir. Yes, I have been township clerk in Claflin, Barton county. (Folio 5966.)

As to whether I ever heard any of the farmers or people complain prior to the commencement of this suit that the value of their lands had been decreased or their productiveness lessened by reason of the lowering of the ground water or underflow, I would say no, sir.

VALUE.

Yes, land is more valuable in the state now than it was ten years ago, because it produces more and pays a better percentage on the money invested. I don't think we have any better farming now than we did twenty years ago. The country is a good deal better developed in some respects. Yes, there are better markets. (Folio 5969.)

GEO. N. MOSES, ice business, Great Bend.

COMPLAINT.

As to whether I ever heard the farmers of this county in the valley of the Arkansas river prior to the commencement of this suit complain that their lands were being made less productive or less valuable by reason of the subsidence or sinking of the ground water, I would say I don't call to mind that I ever heard any objections. As to the crops raised in the valley of the Arkansas river in this county in the last five or ten years, compared with the crops raised in another like period prior to that time, I would say the average is better now. (Folio 5952.)

VALUES.

As to the values of farm lands in this valley in Barton county compared at this time with those of previous years, I would say that lands are selling now very much higher than they were in previous years, and this county is now in a more prosperous and growing condition than it has ever been, yes, sir; that is, it has been for the past few years.

Land values have gone up here lately on account of the big crops of wheat. Ten years ago Barton county was not considered one of the half dozen great wheat counties of Kansas, and to-day it is. During the last eight years it has been coming right to the front, and wheat is now our principal crop. Some years we raise very good corn, but it not a sure crop. No, sir, we can not rely upon a corn crop at all like we do upon our wheat crop. (Folio 5957.)

JOHN ROGERS, farmer, Great Bend.

FLOW.

I have seen the river very often—every little while. Yes, sir, I have seen the river every little while since I have lived in the county during all that time. During the last five or six or eight years, compared with the flow in the river for an equal length of time when I first knew it, I think it is a little heavier—a little more water. I have lived here about eighteen years, right on the river, and I have seen a good deal of the underflow. (Folio 6009.)

GROUND WATER.

I have lived for about eighteen years right on the river, that is, about four and a half miles from it. I have owned that land down there about twenty-two years. I have driven several pumps down for wells on that land, and I also sank some about eighteen or nineteen years ago. In late years we drove one, but not in the same locality. It is about six to seven feet to the water level. I don't think there has been a great deal of change in the level of the ground water at my place in those eighteen or twenty years. (Objection.) The level of the water under the ground into which I sank the wells, comparing the time when I first went there with the last few years I will say I never found any difference. Not much. Not anything to speak of. (Folio 6010.)

CROPS.

The crops that I raise as compared with those in the early days—they are as good if not better than they were in the former days. In as much of the county as I know of along the Arkansas river the crops in the last six or eight years are a little better than they were fifteen or twenty years ago. The crops are better because we get more. That is how they are better. I am not acquainted with what causes them to be better. Yes, I think there is more rainfall than we used to have. (Folio 6011.)

F. D. WILSON, farmer, Great Bend, Kansas.

I live at Great Bend, Barton county, Kansas. I am city marshal. I have lived in Barton county a little over twenty-nine years. I have lived about ten miles southwest of Great Bend, and I was a year or two about ten miles northeast. I have been familiar with the lands of the Arkansas river in this county most of the time since I have been here. Great Bend is situated in the Arkansas river valley. (Folio 6046.)

VALUE.

As to the values of lands along the valley of the Arkansas river in Barton county at the present time compared with the value of the same lands in the earlier years since I have lived here, of course when I first came here most or a great deal of the land was railroad land. It was worth, I think, along in the valley up here, about $4 an acre, out for quite a ways, two miles say, from the river. Then the land

got up so that it was worth—I think it has been up as high as $2,000 and $3,000 a quarter, and for the last six years land has been going up and that land now is worth $6,000 a quarter. No, there has never been a time since I have lived in this country that the farming lands in the valley of the Arkansas river in Barton county were worth any more on the market than they are now. They are worth double now what they were before.

FLOW.

Yes, I have had occasion to dig cellars, wells or post holes in the valley of the Arkansas river in this county, and I have observed the ground water or underflow. As to the general level of the ground water or underflow in the valley now or in late years, as compared with the level of the ground water or underflow in the same locality in the earlier years, I don't think there is any difference in it.

COMPLAINT.

No, sir, prior to the commencement of this suit I never heard any of the farmers or people living along the valley of the Arkansas river in Barton county complain that their lands were being made less valuable or less productive by reason of the subsidence or sinking of the ground water or underflow. (Folio 6047.)

CROPS.

Yes, sir, I have been interested in farming and in the crop production of this county in the years I

have been here. Most of the time I have been engaged in farming myself. I commenced to farm in 1878 and was farming a couple of years, and then I didn't do any farming until about six or seven years ago, and I have been farming ever since.

Yes, I have come in contact with the farmers who operate in this county along the valley of the Arkansas river. My land is right in the valley. Yes, sir, I have been familiar with the lands along the valley of the Arkansas river. Comparing the crops for the last seven or eight years raised on the lands in the valley of the Arkansas river with those raised for any like period of time in the earlier years, I will say that on the average the last six years have been the best six years we have ever had since I have been in the county.

W. B. CORNELL, cattle business and farmer, Great Bend, Kansas.

CROPS.

As to how the flow of the river in the last ten or twelve months, on the average, would compare with any other ten or twelve months that I ever knew it, I would say we have had more water in the river this last September perhaps than any other year I can remember since 1884. As to whether my little creek started to run again on this place that I said used to run over there, well, I haven't been over there. I haven't noticed much about that. I haven't been on that part of my farm this spring, but I went along past a farm I rent out and I noticed the water standing in the corn furrows. As to whether I consider

on the whole that I have been injured, benefited, or whether it is an even thing by reason of having had less water in it, as I say, for the last ten years, my hay meadows—a man who has land along the river bottoms depending on hay—as to whether I have been injured or benefited or whether one about offsets the other, I would say I never paid any attention to it. I don't know as it makes any difference to me as far as I am concerned, individually. (Folio 7539.)

COMPLAINT.

As to whether there has really been enough injury in it to attract my attention or for me to take any particular steps or interest in this litigation over the waters of the Arkansas river, I would say I was interested in it as a citizen of the state, but then it was all politics to me and I let it go. I never paid any attention to it. I have come to the stage where the common people, I think, haven't anything to say. I never engage in politics in any way, shape or manner, and never want any office and don't care anything about it and don't care who has them. I thought there was a good deal of buncombe in the matter, to get some good fees for lawyers. Yes, sir, that might apply to Colorado just as well as to Kansas—the whole business. As to whether I know that Colorado did not bring this suit, I will say, I don't know anything about it. (Folio 7540.)

JOHN F. LEWIS, real estate and farmer, Great Bend, Kansas.

CLIMATE.

Yes, sir, there were hot winds in the early years in this country. They have disappeared since 1897. As to what reason I could assign for their disappearance, I will state it is the development of Oklahoma by being plowed and planted, and Texas; that the hot winds that have injured this country came from the Gulf of Mexico across the arid plains of Texas and Oklahoma when it was not in cultivation and became so heated that they burned our crops in Kansas, and after the plowing up of Texas and Oklahoma the vapor came from those fields and ladened the winds with vapor until they were cool and didn't burn our crops any more. Yes, sir, it was noticed that the hot winds subsided shortly after the breaking up of the sod in Oklahoma and Texas. In the years 1894, 1895 and 1896 there was more sod broken up in Oklahoma and Texas than in any other period in any other country in the United States. The decrease in hot winds was most noticeable in 1896 and 1897. It was remarked by everybody. There have been no destructive hot winds in this part of Kansas, except one season immediately after harvest time here we had a little hot winds, and it was generally believed to be caused by dry stubble. That was the reason. (Folio 6052.)

FRANK GIBSON, farmer, Great Bend.

The first time I ever saw the Arkansas river was in 1863, I guess. I am sixty-four years of age now.

At that time I was in the regular army service. Well, no, it was in the First Nebraska. It was a territory then, you know. (Folio 5973.) I saw the Arkansas river first close to old Fort Zarah here about three or four miles east of town, and we struck it along about the last of August, as near as I remember, and there was not any flow of water in the river at that time. After being at old Fort Zarah we went back to Fort Kearny, on the Platte, and the Platte river was dry, too. No, sir, we were not back on the river any more that year. The next time I saw it I moved to this county thirty-one years ago the first of this month, to this town. I was out here in the fall before that and took up a claim six miles west of the town, and I located there, six miles west and a mile north. That was about four or five miles from the river. I lived there until I went to Greenwood, but didn't stay there but one season, when I came back to Rice county. I haven't been away from here a whole year since I settled here thirty-one years ago, and I have been engaged in farming and threshing altogether since. (Folio 5974.) In threshing I went from place to place and from farm to farm, yes, sir. Mr. Miller and I threshed in this county, I think, nine years, and I then ran one season in McPherson county and one in Ellsworth county. Yes, in threshing we would be brought in contact with a large number of the farmers along the Arkansas valley. We ran the steamer pretty nearly all the time, and our water supply was the main question with us.

FLOW.

Yes, sir, aside from the year 1863, when I saw the river dry, I have seen it dry at other times. Well,

there would be water in holes, probably, but I have seen it dry—in places it would be dry where it wouldn't in others. From Kinsley down to the mouth of the Pawnee up here it was dry—four years, I guess, it will be this summer. But from Larned down to Raymond there would be some running water in it. Yes, it was dry in those years, 1879, for instance, and 1880, but I don't remember whether it was clear dry that season or not. (Folio 5975.) It was very nearly dry, if it wasn't. As to the habit of the river in the first fifteen years I was here as to going dry at certain seasons of the year, I would say it would generally go very low in the fall, along from 1874 up to—unless it was once in a while a wet season like this, rains in the mountains or something that started it earlier, it would come up along in May and then work down until you could wade it without any trouble in the fall. As a general thing, once in a while in the fall the river would be harder to ford.

From my observation and experience with the river for the last thirty-one years, and comparing the flow of water in the river for the last five or six years with periods of five or six years in the early times, I would say there has not been such a great deal of difference in it only in May. In May and June, the fore part of June, it is generally higher—it was higher in the earlier years than it has been of late years. I think the average flow in the river the year round will average very nearly as good as it used to. (Folio 5976.) No, it doesn't get quite as high in May, and it has never been dry since I have lived down at Raymond, that is, opposite my place. There has always been some running water in it there.

GROUND WATER.

Yes, to a certain extent I have heard of the ground water, or underflow, as it is called in the valley, and as to its level throughout the valley of the Arkansas river through the country with which I have been familiar for thirty-one years, compared now with what it was in the earlier years, I would say I haven't had so much experience with the drove wells until the last twenty-two years. Up here I have a dug well. But it was affected once in a while by either—this well up west of town here—the big well—sometimes the water would rise a little in it, but very little. In the twenty years I don't think it has varied a foot in my place. I drive my wells down there and move them every once in a while, and cut the pipe the same length for all of them. It is nearly level, you know, back, and I aim to dig down to the level of the underflow to set my cylinder so as to get it below the frost. That is three to five feet, and I put ten or twelve feet of pipe on below, and in testing the depth of the water in the pipe before I put my pump on I have found but very little variation in it. I have driven thirty-four pumps, and have to take some of them up every once in a while and change the points, you know, and move them. (Folio 5977.)

COMPLAINT.

As to having ever heard any of the farmers in Barton or Rice county in the valley of the Arkansas river before the commencement of this suit complain that their land was being damaged or made less valu-

able or productive by reason of the underflow or ground water seeping or getting lower, I would say no, sir, I have not.

CROPS.

As to the crops per acre on the same lands in Barton and Rice counties in the valley of the Arkansas river, in the past five years or ten years, compared with the earlier years, I would say that with the exception of 1878 they have averaged better of late years.

CLIMATE.

As to any change in climate or the way in which our rains come, I would say they don't seem to come as heavy now. I don't think there has been but very little variation in the amount of water that falls, but it has been more even and better distributed in the last five or ten years than it used to be. No, it don't wash and pile the sands around like it used to. (Folio 5978.)

ROBERT A. BIDLEMAN, farmer, Great Bend, Kansas. (Folio 5985.)

I reside near Great Bend, Barton county, Kansas. I am a farmer and came to this county in March, 1878, and have been farming from that time to the present. My farm is about four miles south of Great Bend. It is on the south side of the river, and the eighty acres that I now live upon is about a mile and a quarter from the Arkansas river. I have

been farming in that vicinity ever since 1878. (Folio 5986.) Eight years ago I moved onto another farm nearby. The land that I farmed is what is called second bottom. I have been over the lands there which are called the first bottom and have seen them frequently since those early days. My land doesn't extend into the first bottom. Ever since those early days I have been up and down the river frequently.

FLOW.

As to the flow of the Arkansas river in this county during the time I have resided here, it was dry in spells and sometimes there was a little channel of water. (Folio 5987.) This usually occurred in the spring of the year, at the time the freshets would come. Sometimes that would be in May and June. Then in the fall of the year we had these hot, dry winds. I have crossed it when there was no water in the river at the time except in little holes. The river did run dry in those early days. It did so at intervals. Sometimes there was water there in the river and sometimes there wouldn't be. I couldn't say whether or not it was a matter of common occurrence in those earlier years. I have seen many years there when there was no water in the river at times. Lots of times when I would go across the bridge I would'nt take notice whether there was any water or not. I would always have to go across the bridge when I came to town, and sometimes I have driven across the river in coming to town when there would be no water. In those early years I saw it dry more than once. It occurred quite frequently. As to the

flow of the stream in the river during the last three years, as compared with those earlier years, I would say there has been more water, that is, taking it the year through. (Folio 5988.) Leaving out of consideration the high floods or high waters in the Arkansas river in this county, from my observations of the flow of the stream in these early days, as compared with the last ten years, it is a hard question for me to answer, because I never took much notice of the river. Taking it in cycles of eight years at a time, and beginning with 1878, I would say there has been more water flowing in the Arkansas river in the last eight years than previously; that is, as compared with the earliest eight years. (Folio 5989.) I don't think there was much change between those earlier years and the later years. There has been more water in the river in the last three years than in those earlier years. That applies to the dry season of the year here in the river. Of course, we haven't had any very dry season in the last three years. Taking it in the fall, the flow of the stream in the Arkansas river here along later in the summer and fall months has been as good in the last three years as during the same season in those earlier years.

In addition to farming, I also used to run a threshing machine. (Folio 5990.) That was from the '80s up to 1898. In that business I was all over down south there through that country, in localities. In some years I would get out of my neighborhood ten or twelve miles, and in so doing I met the farmers there from the east and west and south. I threshed also for farms near the Arkansas river, and I have seen those farmers during all those years.

COMPLAINT.

In coming in contact with all these farmers during all that time, I have never heard any of them complain to the effect that the water level had been lowered so as to hurt their crops or their land. Of course, they might have complained to others, but they have not to me. There was complaint among the farmers about the overflow of the river; that is, it drowned out their crops. (Folio 5991.) That was on the bottom land, right along adjoining the river.

CROPS.

As to the crops raised on my land and also on the land in that vicinity running down to the river and up and down the river, and comparing them with the earlier years, taking, say, the last seven or eight years, the crops have been better in the last few years, taking it on an average, than they were before. In 1892 we had a good crop, and then from that up to 1897 we had failures, of course, in dry weather. (Folio 5992.) These failures were occasioned by dry weather and lack of moisture.

COMPLAINT.

I never heard anyone complain to the effect that any lands in that vicinity had been injured by the lowering of the underflow.

CROP.

The wheat in Barton county is raised on this upland almost exclusively now. Of course on the north side of the river we raise wheat mostly, but take them three townships on the south side of the river, they raise considerable corn, too. (Folio 5995.)

FLOW.

During those early years, as to my having a definite recollection of the river, well, I know there are some times when I would go across there—I know I have crossed that river many times without getting the soles of my shoes wet. Oh, yes, I can remember when there was water in it as well. I am not saying but what there have been channels of water going through there, but of course I claim it has been dry, too.

GROUND WATER.

As to what interest I have taken in this case, I have no interest in it whatever. I am a Kansas man from start to finish. I can't say how the Colorado attorneys found me out to testify in this case. They came out there yesterday afternoon and asked me the questions you gentlemen are asking me here today. I answered them the best I knew how. I didn't know I was going to be subpœnaed.

As to the underflow and its rise and fall with the amount of water in the river, I couldn't say, because

on the ground there you see—— The land that I farm, the underflow has no influence on that land, no, sir. There are probably people living right there in that bottom that could answer the question better than I could. There is one man here who will be on the witness stand that lives right there on the bottom. No, there is no land on the bottom there that is marshy except in wet weather. The bottom lands are mostly used for hay land and pasture, but when we have rains like these we had here last harvest, of course they can't go in on that bottom land and mow hay or anything of that kind. That would be the moisture from above, though, coming down from above. (Folio 5996.)

CLIMATE.

There has been a great deal more rain during the last three years than during the '90s. It might be that I judge the condition of the river to quite an extent by the rainfall here.

L. D. WILLIAMS, farmer, Great Bend, Kansas.

I am fifty-eight years old. I am a farmer and live in Barton county. I got my first land in 1878—homesteaded it. I took up eighty acres. That land is about two and a quarter miles east of Great Bend, and the north line of my land is a little over half a mile from the Arkansas river. My land is on the south side of the river, and I have been farming all these years, from the time I took the land until now. They call this land which I have first bottom. (Folio 5997.)

FLOW.

In reference to the flow of the Arkansas river in this county in those early years as compared with the flow in more recent years, say during the last five to eight years, we have more now than we had eight or ten years ago. There is more water flowing. And that is also true during the fall of the year. As to the flow of the river during those early years and these late years, I would say there is more water flowing now than in those early years. (Folio 5999.)

CROPS.

I have hay land on my place on which I have cut hay off and on all these years. I have got twenty-seven crops in twenty-seven years. I have never noticed any change in the amount of hay produced there on that land during those years. It is just as good now as it ever was. The rest of my land was pastured, outside of my garden truck patch, and the rented land was in meadow and corn. On this rented land the crops, as compared with the earlier years, are even better, and the crops upon the lands in the vicinity of my farm, as compared with those earlier years, are better.

COMPLAINT.

Yes, I am well acquainted with the people up and down the river, especially the farmers, say for eight or ten miles, up and down the river. I have never heard any complaint from any of those farmers

to the effect that their crops or land had ever been hurt or injured by any falling or lowering of the water level in that country. (Folio 6000.)

E. E. EPPERSON, farmer, Great Bend.

FLOW.

I have filled an official position in this county, that is, as county treasurer. I went out of office two years ago. I am pretty generally acquainted with the farmers living along the Arkansas river in Barton county. My land is situated about half a mile north of the Arkansas river. I have 108 acres there in the valley of the Arkansas and raise on it wheat, corn and alfalfa. My land is all valley land, that is, bottom land. Yes, I have lived right there by the side of the Arkansas river in this county since 1884. As to the surface of the flow of water in the river during the last six or seven years as compared with the flow for a like period of years when I first knew the river, taking the year through, the average, I don't see much difference. If anything, I think a little more. (Folio 6016.)

GROUND WATER.

Yes, I have heard a whole lot about the underflow in Kansas. I have driven many wells on my place. The water level on my place is about six feet below the surface. When the river is full of water of course it is nearer the surface; when it is empty it is about six feet. I have never noticed any effect on this water level any farther than my own place. I am in the

neighborhood of half a mile from the river. I don't think there has been any permanent change in the water level of the ground water since I came to this country.

CROPS.

Comparing the crops we have raised in this county in the last six or seven years with those raised in a like period of time before that and since I have been here, they are better, I think. (Folio 6017.)

COMPLAINT.

No, I have never heard anybody before the commencement of this suit complain that their lands have been injured in value or productiveness by reason of the falling of the general water level of the country in the valley.

CLIMATE.

As to the climate and rainfall here now in the last few years, as compared with the earlier years in which I lived in this county, I would say that the rainfall, while it might not be any more, is better distributed for our crops, and I think that that accounts for the better crops.

GROUND WATER AND LAND VALUE.

During a wet season when the underflow is nearest to the surface the underflow has been within two

feet of the top, and during a protracted drouth the underflow is ordinarily about six feet. The variation of the underflow is about four feet, to the best of my knowledge and belief on the question. Yes, sir, from my experience that is about where I would place it. And this follows the river, coming up after a rise in the river and going down after a fall in the river. Yes, sir, I would judge so. That is my observation. Yes, sir, my land is good land. I have been offered $50 an acre for it. If the underflow should go down below the lowest point it had ever been at and stay there, as to whether my land would be as valuable as it is now, well, my opinion is that it wouldn't. I don't think it would be as productive. If the underflow all along the valley should go down to the lowest point it was ever known to be at and remain there, as to whether the first bottom lands would be as valuable and productive as they are now, I will answer that I do not think so. I think that the productiveness of the lands along the Arkansas river does depend upon the presence of that underflow to a certain extent, you understand. (Folio 6020.)

EDWIN TYLER, merchant, Great Bend.

FLOW.

Yes, sir, I have been familiar with the Arkansas river ever since I have lived here. As to the flow of the river, taking it the year through, of late years, say over a period of seven or eight years, compared with the flow for a like period of years twenty-five or thirty years ago, in my judgment it is a little more than it ever was before in the time I have lived here.

CROPS.

As to the crops in this locality along the Arkansas river during the last seven or eight years, as compared with a like period in the earlier times, I would say it has been better than any like period or any like seven or eight years. But there were yars like 1877 or 1878 that were just as good.

CLIMATE.

As to the climate and rainfall for the last seven or eight years, as compared with the earlier years, I am not capable of saying whether it is more or less, but it is my experience or it is my belief that it is better distributed in the growing season.

FLOW.

The river very seldom rises after a rainfall here. It has to be a very hard rain to raise it. In the early days it would rise more than it would now at the present time. Last year there was some flow most all the time, or all the time in fact. I think this—that the river runs the year round more water now than it used to. That is, in going down there I find it running. When I used to go down I could go up and down for long distances without finding a pool of water, and I haven't been able to do that in the last few years. In the fall of 1903 there was some water in pools and when the river was up. There is no year but what the river has its rise. (Folio 6037.)

JOHN F. LEWIS, Great Bend, Kansas. (Folio 6022.)

I reside in Great Bend, Kansas. I have lived here twenty-two years, and in Barton county thirty-two years. I am in the real estate business, and I have also been farming. The lands where I farmed are some distance from the river, up on Walnut creek, and are not affected by the Arkansas river at all. I have had an intimate acquaintance with the river for about twenty-four years, that kind of intimacy that I would get from traveling about selling lands. In my real estate business I handle farm lands, and in doing so I have found it desirable to travel about over the country, showing the lands to purchasers. (Folio 6023.)

As to my general familiarity with the Arkansas valley in this county, I would say that in 1874 I made a rude survey with a view to draining the Cheyenne bottoms to the river, and with a view to draining that bottom in a speculative scheme to see what I could make out of it for a beet sugar plant. That was the first attention I gave to the formation and condition of the river.

FLOW.

As to the average flow of the river, that is, the flow for the whole period for a year, not just high or low water, during the last six or seven years, compared with a like period of time in my earlier acquaintance with the river, I will say that the surface flow since 1897 has been much more uniform than it was previous to that time. That is to say, I don't think it sank so low or went so high as it did in former

years in our drouthy seasons. We would have heavy rises and then it would sometimes go entirely dry. As to the total amount of the year's flow in the last six or seven years, compared with the flow for a like period in the earlier years, as to my best judgment on that, well, I don't believe I could compare it with the earlier years, because I didn't have such an intimate knowledge—didn't pay any attention to it. (Folio 6024.) I know that since 1891, the year I moved on the place where I now live, I dug a cellar under my house, and up to 1897 I didn't have any annoyance with the cellar, but since then there has been water in it ever since, and I have been pumping for three years now and have had to fill it up.

As to the comparative flow of the river for the last six or seven years, say with the first six or seven of the twenty-four years when I first became acquainted with it, and as to whether it flows as much or less water, well, I don't think we have larger floods, save this one last spring, for the last seven years than we used to have, but I think we have more continuous water, that is, water that is running to some extent all through the year, than we used to at the commencement of that twenty-four years.

COMPLAINT.

You asked me whether or not before the commencement of this suit I ever heard any of the farmers in the valley of the Arkansas river in this county complain of their lands being made less valuable or less productive because of the lowering of the underflow or ground water. I heard one man make a complaint

that the river was so low that his crop was injured—a man by the name of Harris, down on the river here. He was raising potatoes. I might have heard somebody else, but I don't know or call it to mind. No, I don't recollect that I ever heard any general complaint of that kind. As to the man who complained as to his potato crop being affected, I think it was when he was raising his crop in 1881 or 1882. (Folio 6026.)

CROPS.

As to our crops that have been raised in this county in the last six or seven years, compared with the crops raised in the county here in the valley of the Arkansas river in the earlier years while I was here, I will say that our crops are immeasurably better since 1897, and more uniform than ever before, with the exception of a few years like 1884 and 1878. Those were good years. Taking it as an average for a period of seven years, the crops are far better.

CLIMATE.

As to our rainfall and climate, and as to whether or not there has been any improvement in the last ten or fifteen years, I don't believe that I could definitely answer as to the total rainfall, relatively, in a whole year, but our rainfall during the last of April, May and June has been better for the last seven years than ever before, except the years 1884 and 1878; that is, the rains are better distributed and are more uniform

and come at the proper time of the year, and that makes a better and more reliable crop. (Folio 6027.)

H. SCHWARTZ, farmer, Sterling.

VALUE.

No, sir, I never knew the valley lands along the Arkansas river in this locality to be higher priced or more valuable on the market than they are now, and I never knew the general condition of this section of the state to be more prosperous than it is at the present time.

COMPLAINT.

As to how long I have been familiar with the fact, by reading or general knowledge, that they had been using water from the Arkansas river for irrigation purposes in Colorado and were building large ditches up there, I would say I think eight to twelve or thirteen years ago. No, sir, I never made any objection or complained or started any legal proceedings or anything in reference to stopping the folks there from irrigating, and so far as I am concerned I have paid no attention to what you were doing with the water in Colorado. (Folio 7710.) As to whether I have gone far enough to even make up my mind in regard to it, or care in reference to it, or take it into account in figuring on my lands or prices, or anything of that kind that I would ask or give or take, I don't think I have.

FLOW.

Yes, sir, I think for all practical purposes the average flow of the last ten months is as good as the average flow for any consecutive ten months I ever knew it. I think so. If that be true, and the river affects the underflow, as I believe it does, as to why the level of the ground water or underflow should not be as good to-day as it was in the earlier days, and whether ten months is not long enough to raise the level up again, I would answer, why, I should think it ought to be.

A. A. SWARENS, farmer, Hutchinson, Kansas. (Folio 6067.)

FLOW.

I have been familiar with the Arkansas river since 1871. In reference to the flow of that river in late years as compared with the earlier years, taking it over a stretch of five to seven or eight years last past and an equal period in the earlier years, I would say I can see but very little difference.

GROUND WATER.

Yes, sir, I have heard of what is called the underflow. I have read of it. That refers, as I understand it, to the water lying underneath the surface of the ground. (Folio 6069.)

The highest place to water on our place is ten feet. Yes, sir, I have had open wells on our place. I sank one in the fall of 1871, and I have got an open

well now on the same place and on ground of the same elevation. The level of the ground water at the present time, compared with the level of the ground water in the earlier times, is just the same. It is standing just about ten feet. So far as I have had opportunity to observe, there has been no perceptible or definite change in the level of the ground water of that country since I settled there, no, sir.

CROPS.

As to the crops in our locality and in the vicinity of Hutchinson in the valley of the Arkansas, compared for the last six to eight years on the average with the crops for a like period during the earlier years, I would say that our crops now are better.

VALUE.

As to the values of farming lands in the valley of the Arkansas river now, as compared with the values of the same lands at earlier periods since I have resided here, I would say the land now is the highest, I think, it has ever been, unless it was in the time of what I call the wild-cat boom. (Folio 6070.) There was a while, I believe in 1888, that there was what I call a wild-cat boom. That boom was mostly around the town, I think. I wouldn't say positively, but I think it was mostly in city property—the boom prices.

COMPLAINT.

As to whether, prior to the beginning of this suit, I have ever heard any of the farmers of Reno county living in the valley of the Arkansas river complain that their lands had been made less valuable or less productive by the subsidence or sinking of the underground water or the underflow, I never heard of it.

CLIMATE.

As to the climate in this locality for the last seven to ten years, compared with that of earlier times in reference to its value for the growing of crops, I would say I believe that as the country has grown up the climate has been better. Of course we have dry years, when the crops are not so good, but I think as a general rule the crops are a little bit better. There are not nearly the hot winds there were in the early days.

DAN WELCHONS, livery business, Hutchinson, Kansas. (Folio 6082.)

I live in the city of Hutchinson, Kansas, and am engaged in the livery business and buy and ship stock, and have been for the last twenty years. I am acquainted with most all of the farmers throughout the country, yes, sir. I buy from them and deal with them. Yes, I own considerable property here, some of it real estate. Yes, I pay a good deal of taxes. I have been here since the fall of 1872, and this has been my home all the time, yes, sir. In the early years I was not in much business. (Folio 6083.)

FLOW.

As to the average flow of the river for the last six or eight years, taking one whole year through with another for that period, not picking out any specially wet or dry year, compared with the average flow of the river for six or eight years in the '70s when I knew it, I would say I have not seen very much difference. Along in the '70s we had awfully dry weather here and the river was very low. I don't think the flow of the river on an average for six or eight years last past varies very much from what I have known of it since I have been here, excluding any special year. Well, I couldn't say. As to whether the river is as good to-day for all practical and ordinary purposes as when I first knew it, on the average, I couldn't say as to that. I don't think there would be any difference so far as my judgment is concerned. I would think it as good a river now. (Folio 6084.)

GROUND WATER.

Yes, sir, I have heard of what is called in Kansas the underflow or ground water. The town of Hutchinson is situated right in the Arkansas valley. As to whether the level of the ground water or underflow here at Hutchinson has changed from what it was when I first came here as to its distance from the surface, I will say I don't think there is any difference now. Yes, sir, I have seen excavations in the way of cellars or basins or wells made in the early days and then openings of that character made in the latter

days, so that I have had an opportunity to see how far they have had to go for water in the years when I first came here and about how far they would go in the last few years, and from this observation I have not noticed any difference in the water level in this immediate locality or valley. (Folio 6085.)

COMPLAINT.

I have not noticed any difference. As to whether I ever heard any of the farmers of this locality before the commencement of this suit complain that the level of the ground water underneath their ground had sunk and that thereby their land was damaged either in market value or productiveness, I would say no, I have not.

CROPS.

As to the crops raised in the valley of the Arkansas river in Reno county during the past six or seven years on an average, compared with those raised in any other period of six or seven years prior to that time, I think the crops have been good in the last three years. I think the crops have been an average, and a little better. And taking it for a period say of five or ten years, and comparing the last five or ten years, on an average, with the first five or ten years that I knew the country, as to productiveness, well, now, a person can hardly remember back, you know, eight or ten years. Of course we had failures here. We had considerable failures here four or five years ago in crops

on account of hot winds. Yes, there is very much difference in the years here as to the failures of crops and good crops. These hot winds in July generally injure the crops. But in my judgment, as a buyer of stock who has ridden over the country in the general valley of the Arkansas river in this county, I think it is better in productiveness now than it was fifteen or twenty years ago, yes, sir. (Folio 6086.)

VALUE.

As to the values of farm lands in this valley at this time compared with the value of the sand lands at any previous time, I would say they are considerably higher now, our lands are around here.

CROPS.

Yes, sir, the crops have been as good the last three years as in former years. I guess we have had seasonable years for two years here. Yes, sir, the rains have come not only in amount but have been seasonably distributed these last two years. The principal crop on the first bottom lands through Reno county I think is corn. Yes, corn is poor sometimes. As to the difference and what causes this variation in crops, I will say the hot winds in July. Yes, sir, there have been hot winds in July in the last ten years. The hot winds last year were not so bad. We had some hot winds last July, but the two years previous to that time we had hot winds that kind of cooked the corn. (Folio 6096.)

FLOW.

Yes, sir, I have seen the Arkansas river dry in the '70s, but I couldn't say as to whether I saw it dry in the '80s. As to whether I knew a time for ten years when it didn't go dry, I would say I don't know now. I expect not. I expect it has likely been dry pretty much every year—pretty nearly dry. It might not have been entirely dry, but very low, a little water running in it. But whether the year when the mill quit using the water was a particularly dry year or not, I don't know. I guess the mill did run for a while by steam after they quit running it by water power, yes, sir. (Folio 6102.)

L. P. HADLEY, farmer, Hutchinson, Kansas. (Folio 6103.)

I live three miles northwest of Hutchinson, in Reno county, and have lived in that locality a little over thirty years.

FLOW.

Yes, sir, I have known the Arkansas river ever since I came here some thirty years ago, and as to the average flow of water in it, taking it over eight or ten year periods and comparing eight or ten of the last years past with eight or ten of any earlier time since I have known it, as to the volume ofwater on the average, I would say my opinion is that it is very nearly the same.

COMPLAINT.

As to whether I ever heard farmers living along the valley of the Arkansas river in this county in the last ten or fifteen years complain that the river was disappearing or shrinking or getting smaller, I would say no, I don't remember hearing any complaint on those questions. (Folio 6104.)

CROPS.

As to the productiveness of the lands along the Arkansas valley in this county, compared now with what they were in the earlier years, according to my judgment as a farmer I would say I think it is as good, considering the weakening of the soil, of course. That is, I think the rainfall and moisture is as good if not a little better than it used to be, for the last six or seven years. But whether it means to be permanent or reactionary, I don't know anything about that. When I speak of the weakening of the soil I mean the natural weakening that follows the growing of crops constantly on the same soil, yes, sir, that is what I meant, and that is more noticeable where a crop such as corn is continued on the same land without rotation. (Folio 6105.)

VALUE.

As to the values of land along the valley in Reno county now, compared with the values of the same lands in the earlier period since I have been here, I

would say they never have been as valuable as they are now, and I think they have doubled in value during the last ten or twelve years, perhaps. (Folio 6106.)

GROUND WATER.

As to my experience and observation in that locality as to any change in the level of the ground water or the depth to which I have been obliged to go for first water since I settled there some thirty years ago, I have not noticed any difference in putting down wells.

FLOW.

I have been acquainted with the Arkansas river for the last thirty-two or thirty-three years, since I have resided in this county. As to the flow of water in the Arkansas river in this county, taking it over a period of six or eight or ten years, as compared with the average flow for a like period of years in the earlier times, I will say that I don't know of any change in it. Of course our changes here—sometimes the river is up and sometimes down. That is, it is up at a certain time of the year and down at a certain time of the year, yes, sir. But taking it on an average for a group of years, I can't see any difference in it. (Folio 6123.)

COMPLAINT.

As to whether I have ever heard any of the farmers of this county living along the valley of the Ar-

kansas river complain prior to the commencement of this suit that their lands were being made less valuable or less productive by the sinking of the level of the ground water, I would say I never have, nor have I heard them complain that their lands were being made less valuable or less productive because the Arkansas river was disappearing or was carrying less water than it did in the earlier years.

CROPS.

As to the productiveness of the lands along the valley of the Arkansas river in this county with which I am familiar in later years, compared with a like period in the earlier years, I would say, why, it has gained in crops. Our land has gained in production. I should say that the productiveness for the last fifteen years of these valley lands in Reno county as compared with the productiveness of the same land for the first fifteen years, per acre, on the average, has increased. We get more bushels and better crops. I was township trustee a couple of times. (Folio 6124.)

W. B. JEWELL, farmer, Hutchinson, Kansas.

GROUND WATER.

As to whether there is any difference in the general water level on my place of late years as compared with the general water level in the earlier years, I would say I don't see any difference except when the river is up, and when it is down there is a little differ-

ence in it, that is all. Taking the general water level through the last six years on my place, compared with the first six years I was there, I would say that I can see no difference.

Yes, my land is just as good so far as its water level is concerned, in my judgment, to-day, as it ever was. I don't see any difference, only I don't think the land is hardly as strong, as far as that is concerned. I suppose it is worn out a little more, but in my judgment I don't see any difference in the Arkansas river as it passes my place down there or passes Hutchinson. It never was a very good river. (Folio 6147.)

COMPLAINT.

As to my ever having heard the farmers along the valley of the Arkansas river in Reno county before the commencement of this suit complain that their lands were being made less valuable or less productive by the sinking or lowering of the ground water or underflow, I would say not to my recollection.

CROPS.

As to the crops on the average that have been raised in this county within the last six or eight or ten years, as compared with those raised on the average in a like period in the early years, I would say they are just about as good, except, as I said, the land is worn out a little and not quite so strong and don't grow quite so big stalks. But aside from the natural falling off that comes from the use of the land and the wear-

ing of it, I think the crops in later years, on an average, are about as good as they were formerly, so far as I can observe, yes, sir. (Folio 6148.)

VALUE.

As to the average price of lands in the valley of the Arkansas river through Reno county, compared now with what they were in the past, I would say that prices are getting higher all the time. They are higher. Land like the kind I have is selling down there for about $6,000 to $10,000 a quarter. A man adjoining me sold his half section there for $21,000. Of course he had lots of improvements.

A. N. CULBERSON, farmer, Hutchinson, Kansas. (Folio 6162.)

I live out twelve miles south of here on the Arkansas river. I have been thirteen years where I live now, and have been right there in that neighborhood since 1887, and have been engaged in farming in one way or another all that time. Yes, sir, I own 80 acres on the river, but it doesn't run right down to the river, exactly. The southeast corner of it is about a hundred rods from it. But I would call my land first bottom, but some of it near the center is higher, sandier land than that. It is what they call the first bottom, I guess. (Folio 6163.) As to the crops raised there in the last nine years, as compared with the first nine years I was down there, I would say right in here it don't appear to me the corn has been so good in the last four or five years as it was before, right in that neighborhood. It don't appear to me as though they

had as good corn. Well, I think the cause of it is lack of rain. But taking a longer period, say splitting the eighteen years I have been in that locality into nine-year periods and averaging the first nine years with the last nine years on the general crops, I would say I don't know as there is much difference, except four years ago, when nobody had anything. Yes, that was a drouthy year. I think it was four years ago there was no corn raised there much at all anywhere around.

As to the condition of the river having any effect on my crops, I would say I depend on the rains myself. (Folio 6164.) Yes, sir, I have noticed a difference in the crops on my land when the river is high or when it is low a hundred rods back. I have noticed when it was so high that I couldn't get in to attend to it, that is, Cow creek and it together. As to whether when we have a dry year and haven't any rain I gain any advantage from the river, I would say four years ago is what I would call a dry year, when we didn't raise anything, and the river that year was like it generally is, I guess.

No, sir, I can't see the river from my house, but I can from my place, yes, sir. As to the average of the river in the last eight or nine years I have been there, compared with the first eight or nine years, I would say I don't see any difference. It gets low and gets high, just as it always has since I have been there.

VALUE.

As to the values of land in my locality now, compared with what they were when I first came to the country, I would say they are higher, considerably.

COMPLAINT.

As to whether or not before the commencement of this suit I ever heard any of the farmers along the Arkansas river complain that their lands were being made less valuable or less productive because the underflow or ground water was sinking or getting away from them, I will say no, I don't know that I did. I have no recollection of hearing any complaint of that kind.

GROUND WATER.

As to whether there is as much water flowing on an average now as there was in the earlier years, I think there was about the same. If it would go plumb dry I would be apt to know it, and when it runs over the banks I know that, but I have paid no attention to it outside of that. Yes, sir, that is about all that I have paid any attention to, was these two extremes.

MR. FRANK VINCENT, vice-president and general manager of Hutchinson Salt Works, also farmer, Hutchinson, Kansas.

All of our lands here are increasing in value as compared with any former period within my residence here, and I think the country is quite prosperous now. I should say there has been an increase all the while in cultivated uplands in Reno county, and in bringing lands into cultivation. My judgment is that the bottom lands are more valuable than the uplands, situated the same distance from town or from the markets and with equal improvements. As I say, I think the

valley farms are the highest, especially on account of the underflow water which we think helps some crops, and I think that is true to-day, yes, sir. (Folio 7759.)

FLOW.

As to the flow of the river for the last ten or twelve years, outside of excessive floods, compared with the flow of the river during the early years that I knew it, I will say it is now very much less. (Folio 7774.)

L. A. BEGGER, bonds and loans, Hutchinson, Kansas.

GROUND WATER.

Q. But I mean this first general level of the water that you strike when you dig in the ground. Do you have any idea or have you ever had anything to lead you to believe that that whole body such as you have described as extending twenty miles south and ten miles north is running in any definite channel or generally percolating through the soil down hill? A. In a general way I should say it was percolating through the soil.

VALUE.

As to whether there have ever been any better values of land generally along in the valley in Reno county than there are now, I will say the lands to-day are worth about what they were in 1887. That was the high time of land. And then they began to de-

cline, and now they have got back to where they were in 1887. As to whether in the loaning of money on lands we loan any less or look upon them as of any less value because there has been any change in what we call the underflow, generally speaking, I don't think we are taking that into consideration. We were much alarmed for a number of years, but we have had good crops in the last six or seven years, on an average. (Folio 7823.)

CROPS.

Our crops have been very satisfactory. No, I do not remember a time when for six or seven successive years we had any better crops than we have had during the last six or seven years on an average.

CHARLES COLLINS, cattle business and farmer, Hutchinson, Kansas. (Folio 7843.)

I live at Hutchinson, Kansas. As to how long I have lived in Reno county, I don't know exactly, but our ranch was in Rice county when I first settled in this country, and on the reorganization my ranch was put in Reno county. That was about 1871. I settled there in 1870. Yes, sir, I have lived in Rice and Reno counties ever since 1870. In the early years my business was handling Texas cattle, and I have been handling Texas cattle about thirty-five years.

FLOW.

As to how the carrying capacity of the river at the present time would compare with the carrying

capacity in the earlier years, the water being at the same height, well, it appears to me that the capacity of the river—that there is one-third of it gone as compared with what it used to be along in the early '70s, by the fillingin from the sides and the enlargement of those islands.

As to how the flow of the river for the last ten or twelve years compares with the flow for the first years, or a series of ten years prior to 1890, exclusive of floods, well, the flow has been diminishing since 1892 a great deal until during the last three years it has kind of come up again. (Folio 7846.)

GEORGE W. WATSON, postmaster, Hutchinson.

CLIMATE.

As to whether in the early days there was a greater run-off from rainfall into the river through the state of Kansas because of the fact that the country was then in sod and is now largely under the plow, and more waters are absorbed, I would say I should judge to a certain exten there was a greater run-off, but how much that affected the flow, I couldn't tell, of course. Yes, sir, that part of the state of Kansas lying west of Kinsley or even west of Hutchinson shows a change as to its production of crops or the certainty of crops in the last ten or twelve or fifteen years, and as to what I attribute that change to, I would say I attribute it to the increased number of acres now under cultivation, for one thing, causing an increased amount of water that is evaporated and not run off at all, and an increased

humidity in the atmosphere and consequently an increased average rainfall—although the statistics might not bear me out in that, but there is an increased amount of moisture. Yes, sir, it is my claim that whether the statistics would show an increase in the total precipitation or not, the rains are better distributed for crop production, come in a gentler and better form, and that there is more humidity in the atmosphere and that the rains come in a better average time. (Folio 7878.)

CROPS.

As to whether it is a fact that the country lying west of Hutchinson along the valley of the Arkansas river from that point to the Colorado state line is more producive now and has been on the whole for the last seven or eight years than it was in the earlier period, I will say I will draw the line at Dodge City. From a line running north and south from Dodge City and east of that we feel that we are more certain of crops now then we were ten, twelve or fifteen years ago. West of that I can hardly say that there has been any improvement in that respect. No, that is not because I have not full information. I have full information to the state line. I am keeping track of that very closely. Yes, sir, I am aware that the people at Garden City claim that their crops are much surer there during the last few years than formerly. That is true. But whether it is simply by reason of an extraordinary amount of rainfall in the last two years or from any other cause, I am unable to say. (Folio 7879.)

NECESSITY OF IRRIGATION.

My first experience with the Arkansas river was in 1890. I came to Kansas in 1867, but came to this part of the state in 1890, and at the latter time I became acquainted with the river. (Folio 7881.)

As to which would work the greater injury, in my judgment, from my knowledge of the country and the citizens of the state of Kansas—the establishment of a doctrine which would prevent anybody withdrawing water from the river for irrigation purposes or the establishment of a doctrine which permitted everybody, both in Kansas and Colorado, to draw on the river for irrigation in accordance with their priorities—I would say, before answering that question I would have to know what their "priority" means. I would have to know what the word priority means there. If it means that the entire capacity of the river has been taken by Colorado, and that under that claim they could take the entire flow of the river, both normal and abnormal. I believe it would be a benefit for them to be prohibited from taking any; but if it means that there would be a fair division of the natural and abnormal flow of the river coming into Kansas and being used in Colorado as well as in Kansas for irrigation, it would be beneficial to both Kansas and Colorado and not detrimental; that the benefit would be greater to the entire state of Kansas by reason of that irrigation and the use of the water for irrigating purposes than it would be detrimental to the balance of the state by simply letting the water flow down the Arkansas river. Now, that is as well as I can answer that question. (Folio 7882.)

JOHN W. HARRISON, Colwich, Kansas.

VALUES.

My land is more valuable to-day that it has ever been in the past, and it would sell for more on the market to-day than it ever would at any time in the past. This is true generally speaking of the lands lying along the Arkansas river in Sedgwick county, and I believe that to be true of lands in the county of Harvey. (Folio 74.)

M. M. MURDOCK, editor of Wichita "Eagle," Wichita, Kansas.

CLIMATE.

When I first came to this country it was mostly an unbroken prairie. There was not much if any timber in the country except the little strips along the water edge. The face of the country is entirely changed. (Folio 588.) The planting of groves—most every farmer has his little grove and orchard and everything of that kind, and it has completely changed the face of the country. Go out on this hill and look over this valley for twenty miles and you would think it was half timber; of course it is not. A great deal of sod land has been broken; I guess two-thirds of our country is under the plow. The growing of this timber and the increase of plowed land has a large climatic effect. (Folio 589.) Formerly the rains came in hard floods on dry land and ran off into the stream because it would not readily sink in-

to the ground. I don't think there has been much change in the precipitation. When it falls on plowed ground it goes off very slowly and makes a more humid atmosphere and is better for crops. We have fogs now where we formerly had no fogs at all. The percentage of water out of any given fall that would run off into the river now would be less than formerly. If it should appear from statistics that the falling off of the corn crop in the counties along the Solomon, Republican and Smoky Hill country had about corresponded with that in the Arkansas valley in the same period of years, this might tend to change my notion as to what causes the falling off in this locality. Northern Kansas has worried me, and of course I stand for southern Kansas; but their corn yield during the last seven or eight years has been phenomenal; and in southern Nebraska the same way. Those are not streams from which there is any amount of irrigation; I don't think there is any at all. (Folio 590.)

VALUE.

The lands are worth as much in the Arkansas valley today as they ever were, on an average, but probably would not sell for quite as much, that is, except during our boom times. But aside from boom times they are worth as much as ever. A good many of our land owners feel that their lands are being deteriorated in price or value, or will be, because their crops do not come up to what they did formerly, which they attribute to the loss of the underflow of the water. Of course values here are growing, because we are a growing community.

All the arable lands of southern and western Kansas are increasing in value because of their wheat producing qualities, and of course as they increase in value they are taxed higher. As far as that is concerned, we have not lost anything. My contention—I said to those people who owned their lands, who bought their farms from the government, with the river there, and the supposition, of course, that it would always be there, "You are going to lose your river and the value of your lands will deteriorate." Now, that is the kind of argument I make. (Folio 594.)

PURPOSE OF SUIT.

This suit was authorized by the legislature, I think, by reason of the action of the people in Cowley, Sumner, Sedgwick and Reno counties acting in concert. We had to convince our own legislature that we were being damaged by the loss of water. I don't expect that the counties of Hamilton, Kearney, Finney, Gray, Ford or Edwards take an interest in having this action instituted. I don't know. They wanted to profit by Colorado's example, I reckon. They were in fact taking out the water from the river themselves to some extent. My first complaint was against the western people of Kansas and not against Colorado. (Folio 595.)

Q. What the people here desire is not only to establish a rule as against the people of Colorado appropriating water, but also against the people in western Kansas who appropriate water?

A. The people here desire—being afraid they would be robbed of the river entirely—a decision

from the Supreme Court to the effect that the Arkansas river shall not be appropriated in whole, either in Kansas or Colorado or by anybody else. (Folio 596.)

Our fight was against the other fellow, not against the Kansas fellow particularly, because the irrigation enterprises of western Kansas have never amounted to much, and we had no particular fear of western Kansas. It was the big corporation ditches of Colorado that convinced us that in a little while we should have no water at all, and the bed would be filled with shifting sands. I don't distinguish between present irrigation enterprises in western Kansas and present irrigation enterprises in Colorado except as Colorado enterprises are greater than in Kansas. (Folio 597.) I am not in favor of cutting out the Colorado people and allowing western Kansas to appropriate the water. I am not in favor of anybody destroying the river. My contention really was and this scheme was, of course, sub-irrigation and navigability of the river and sewerage for the cities along its course. The object of this suit is to save the river for the people who settled along it. (Folio 598.)

Q. That is, on this part of the river, you mean?

A. Well, self preservation is the first law of life. Of course we are for ourselves first.

We are perfectly willing that the people of western Kansas and Colorado shall have the use of the river the same as we have or for the same purposes. This excludes their use of the river for irrigation.

NOTICE TO SECRETARY OF WAR.

Probably in the eighties I took up the question with the secretary of war of the fact of ditches being built in Colorado and western Kansas, and of the fact that people here in the city were filling in our river, and I wanted to stop it, and it was my understanding that the secretary of war controlled navigable rivers, and the Arkansas is a navigable river under the law. His answer to me was that in the absence of some enabling act he could probably not do anything. (Folio 10.)

STIRRED UP THIS SUIT.

Then I commenced the racket in the newspapers that brought about this contention here to-day.

D. E. BREESE, real estate, Wichita, Kansas.

VALUE.

The general effect of the value of lands here as the years have proceeded has been that land is worth more money now. (Folio 216.) Prices have gone up all over. There has been a general rise all over the country. There hasn't been much change in price for several years in Sedgwick county. The first bottom lands are the more valuable.

I am in the land business, selling, myself, quite extensively. (Folio 219.) A large part of my business—in Illinois in the same period the land has gone from fifty to a hundred dollars an acre, but the land

has advanced here correspondingly, I think. The quality and productiveness of the lands has remained the same in Illinois. I mean to say that lands that have any merit at all have advanced all over the country. In this advance in price I do not think there has been very much difference between the bottom lands and the second bottom lands. (Folio 220.) The land has not doubled in value here in the last twelve years. I think it has increased fifty per cent. (Folio 221.)

JOHN W. SHIVE, farmer, Wichita, Kansas.

ALFALFA.

I have never had a failure of alfalfa on my lands after I once secured a good stand, not from natural causes, except this year. This year it got too much surface water. Land is better for alfalfa when it does not have too much surface water or the underground water is not too near the surface. The deeper the soil the better it is for alfalfa. Alfalfa will go down for water for fifteen or twenty feet after it once gets started, and it is better upon soil of that depth, where it can find water at that depth, than if the water comes too close to the surface of the ground. It does better on lands under which the waters lie deep than corn does, for that reason. It is rather speculative as to how far corn extends its roots into the ground. In dry seasons the roots will go much deeper than in wet seasons. (Folio 341.)

FLOW.

I know in a general way the width of the country that the Arkansas river drains in Kansas. (Folio

353.) It is pretty hard to tell how wide a country it drains, because all of the southern part of the state here is drained by the Arkansas—the western part. The Cimarron goes into the Arkansas river. It does not strike it in this state. I would say that the drainage anyhow—the average width is one hundred miles. I would say that the cultivated lands in this drainage have doubled during the last ten years over what it was the first fifteen years that I knew the river. (Folio 354.) The run-off of water is not as great from cultivated or ploughed lands as it is from native sod lands. The cultivation of lands would certainly retard the discharge, but as to whether the permanent discharge would be as great I can't say. It would retard it at the start; it wouldn't run off so fast nor so quick. The ploughed land absorbs and takes up water more rapidly than the sod land. The water does not evaporate as fast in the ploughed land.

VALUES.

In the last five years the values have gone up considerably. (Folio 356.) The increase has been about twenty-five per cent. in the last six years. This covers the bottom lands generally along the Arkansas river, and there has been a corresponding increase in second bottom lands or uplands. In some instances grazing lands have advanced more than farming lands in that time.

R. E. LAURENCE, real estate, Wichita, Kansas.

CROPS.

My idea is that the yield of corn out of the valley in this county is increasing; that is, the yield per acre. (Folio 447.) Not the amount, but the yield. (Folio 449.) I think that has been brought about by intensive cultivation, and I think we do have more rainfall on the upland than we did formerly. (Folio 450.) It seems to me so.

VALUE.

As to the selling price of lands, this is owing a great deal to the improvements on the land and the location of the land. Farms near Wichita have been sold as high as a hundred dollars an acre. They were sold this year. I remember one or two farms up between the rivers that sold last spring for one hundred dollars an acre; but generally, where they are a little farther back from town, and with fair improvements, bottom lands are worth at least fifty dollars an acre, with good, fair improvements. (Folio 451.) I expect it would be pretty difficult to buy a bottom farm within ten or fifteen miles of Wichita at less than fifty dollars an acre, with good, fair improvements. I think lands are rather advancing in value. That is true of all land. There is not so much difference in selling price between the bottom lands and the uplands since the flood of this year. In places they are not quite as desirable until they get over the effects of this high water. I should say that a bottom

farm equally well located and with equal improvements would sell for twenty-five per cent. more than the uplands. (Folio 452.) I bought a farm of bottom land this summer about five miles north of here. The government surveys showed that on that land of one hundred and twenty-five acres there was about twenty-five acres of made land. I paid one hundred dollars for the land by the government survey and the other land was thrown in. (Folio 453.)

B. H. CAMPBELL, cattle business, Wichita.

VALUES.

We have improved in means of cultivation a good deal; we have better implements and more intelligent and educated farming during these last years. Land is higher in price now because of the general prosperity of the country, the general advancement in values, facilities for transportation, the scarcity of the public domain, which is becoming exhausted and lands becoming scarce, the demand increasing and the supply decreasing. (Folio 486.) All that has contributed to the enhancement of farm lands. The proximity of markets to these lands is a part of the growth of the country, and the railroad facilities for carrying products. The proximity of the market has been very noticeable. We have had good markets and we have had good railroad facilites that carry our products to the markets for consumption. These markets and railroad facilities are all about us, all up and down the valley, all over the country. In later years they have increased very much. Cities near here are points

of consumption to some extent. We consume quite a good deal here with our factories and packing houses and other institutions. That applies more to the vegetable market than anything else, because the excess always goes away and that makes the market. (Folio 487.)

ALFALFA.

As to alfalfa roots extending into the ground, I said I didn't believe they went sixty feet. (Folio 493.) There is no doubt they go further than corn roots. It is a deep-rooted plant, very. I never made any investigation in reference to the underflow, as to how far from the river it extended. It is all observation and practical experience in the use of land —observation in buying the crops and hearing the farmers talk. (Folio 494.) I am sorry to say that the cultivation of the land to corn in this vicinity without rotation with other crops is practiced too much here. I am sorry to say that because it impairs the fertility of the land to raise continuously any one crop, unless it should be a crop like alfalfa, which is a fertilizer itself.

D. A. CANLESS, attorney-at-law, Wichita.

TIMBER.

When I first came into this country there were no trees at all except a few isolated trees along the bank of the river, burned on one side. There were no healthy looking trees. The burning indicated to me that there had been a fire. The Indians always burned

it off every year, and that prevented the growth of trees, but there was a large growth of grass, of course, in the valley. On the high lands the grass was good, but on the west side of the river it was only in bunches.

This country has been very much improved so far as the growing of trees is concerned, and I think the rainfall has increased. (Folio 637.) I don't know of this increase from any statistics, but just from common observation. There is a hundred times more timber in this vicinity and up and down the river in this county than when I first came here. Then there was none, absolutely none, except, as I tell you, along the river, or isolated trees here and there. The growing of these trees absorbed some moisture from the ground, but I think they brought good returns from the atmosphere—brought more rain.

HIRAM W. LEWIS, farm loans, Wichita, Kansas.

VALUE.

I haven't been engaged in farming; I have been engaged in loaning money upon farm lands. There has been a gradual increase in the values of farm lands for the last thirty years, from the government price up to as high as $100 an acre for lands in this vicinity, well improved. (Folio 660.) By the "government price" I mean $1.25 per acre. Lands are probably as high here as they have ever been. There has been a great deal of increase right along. The boom in the city of Wichita culminated in March, 1887, but I don't think the land boom ran parallel

with the boom in city lots. After the collapse of the real estate values throughout the West in 1887, there was some decline, perhaps, in farm lands in this county, but not nearly so great as in city property. The average value of farm lands from seven or eight miles to twenty miles from town, with good average improvements, is from thirty to fifty dollars an acre. We have all kinds of farmers here—good farmers and poor farmers. I have never heard any complaint in reference to crops from our best class of farmers.

CLIMATE.

I don't think the rains in the valley of late years have been more in volume, but better distributed. (Folio 686.) If better distributed, that is an advantage to the country. I don't think that the corn crop has fallen off in its prodcutiveness per acre more than other crops. In the valley lands the wheat has fallen off more than corn. Undoubtedly there are places where the valley lands are improved by having the water removed a little further from the surface.

A. B. CALDWELL, Wichita, Kansas.

VALUE.

The crops throughout the part of the Arkansas valley with which I am acquainted are very much more diversified now than they were twenty-five years ago. There are many crops raised here that could not be raised twenty-five years ago. (Folio 691.) Considering the value of the crops, the lands in the Arkansas valley with which I am familiar are much more productive in dollars and cents than they were twenty-five years ago. (Folio 693.)

Twenty years ago there was practically no alfalfa grown in Sedgwick or Reno counties. They raise a large amount of alfalfa now in those two counties. It is a productive and profitable crop. They ordinarily make about three cuttings a year, aggregating from five to ten tons per acre.

D. M. SPANKLE, farmer, Wichita.

FLOW.

As to the flow of the water in the Arkansas river where I have seen it in this county for the last five years, as compared with the flow of the river say for the first five years I knew it, from my observation I can't say that I have noticed any material change.

GROUND WATER.

As to any change in the water level on the place which I own, of the ground water there, in late years, compared with its level in former years—not referring to temporary or local changes from day to day—I would say there has been no change in the water level to the best of my knowledge and belief. (Folio 6175.)

VALUE.

As to the value of the valley farming lands, including first and second bottoms, in this locality, compared now with former years, I would say both grades

of land have increased in value and the market price is higher now than it has ever been since I have known it. Yes, sir, between the years 1880 and 1895 I was absent from Sedgwick county. I was living at Lawrence, Kansas, and was in the employ of a real estate and money loaning company. I was its secretary, and in a general way my duties required me to pass on securities offered the company. (Folio 6178.)

Yes, sir, I located in Wichita in 1875. I went into the country and boarded with a farmer about three miles west of Main street on Central Ave. I was inspecting securities for a farm mortgage company. I bought the land I spoke of in January, 1876. It is a mile and a half from the Arkansas river and about two miles north of Douglas Ave. I lived there between four and five years, and then I went to Lawrence and stayed there until 1895, and then I came back to my farm and have lived there ever since. Yes, sir, I have taken the "Wichita Eagle," but I have never read those discussions carefully. (Folio 6179.)

COMPLAINT.

No, sir, prior to the bringing of this suit I never heard of any meeting being held by any of the farmers of Sedgwick county in the city of Wichita. No, sir, I don't know of any association that was formed here and that held different meetings and that advocated the bringing of this suit or some other kind of proceeding to protect their interests. I never knew how the suit started. I have paid very little attention to it. No, I don't know Mr. Oldfather, nor Mr. Harrison, nor Mr. Rutledge. I never heard anything about either of them in connection with the agitation of this question. (Folio 6180.)

CROPS.

As to the productiveness of the land and what we depend upon for the production of our crops, I will say, good cultivation. (Folio 6181.)

W. F. STEVENS, farmer, Witchita.

FLOW.

So far as my observation goes, it (flow) is practically the same, taking a cycle of ten years from one time to another from the early days to the present, yes, sir.

GROUND WATER.

But so far as my observation and knowledge go I haven't noticed any difference in what is called the underflow as to its level. No, sir, I can't see any difference. Yes, sir, I think I am well acquainted with the farmers up and down the river along the Arkansas valley who have bottom lands, and I am generally acquainted with those who have valley lands farther back from the river. I don't know all of them here up as far as I live, and maybe up at Hutchinson I don't, but I know a good many of them in my neighborhood for some miles up and down the river, yes, sir. (Folio 6193.)

COMPLAINT.

As to my ever having heard any of those farmers in the vicinity up and down the river prior to the

bringing of this suit complain that the flow of the water underneath had fallen so as to injure their crops or lands, I will say, no, sir. I would say not. As to having heard among those farmers complaint to the effect that their lands have been injured in value by reason of any falling of this underflow, before the bringing of this suit, I would say I don't believe I have.

CROPS.

I raised on my land corn, wheat, oats and potatoes, and I think the crops are as good now as they ever were if the season is favorable. We raised poor crops before, in the early days, and we have raised better crops since. I attribute the loss of crops in those early days to the dry weather, and I attribute the loss of crops now to the dry weather. (Folio 6194.

VALUE.

As to the value of lands, both as to mine and lands in that vicinity along the river there, comparing the present with earlier years, I would say lands are getting higher all the time. They are higher now than ever before, yes, sir.

CLIMATE.

I have seen vegetation burnt up when the river was up, right close to the river. We can't raise a crop without rainfall. As to whether the underflow influ-

ences the production of our lands during a dry year from lack of rainfall, I will say I don't know how to answer that. As to whether the underflow influenced the productiveness of my lands during a year that was dry from lack of rainfall, I will answer, well, we can't raise a crop without moisture. I will answer it that way. If there is not sufficient moisture from rainfall we don't raise a crop. (Folio 6196.) As to whether my land is more productive with the underflow near the surface than though the underflow was low, I will say I can't answer that; I don't know.

J. R. FOSTER, farmer, Wichita.

My boy lives on the farm, and I frequently go out. No, you can't see the stream very well from my farm. We are looking squarely across the river, and the banks being high, it is a hard matter to see the stream. Oh, yes, we can see where the water is, certainly. (Folio 6213.) We can see the stream at the bend or a little above it, on our farm, yes, sir.

FLOW.

As to the flow in the Arkansas river for the last eight or ten years, taking as a whole and averaging it up, compared with the flow of the stream, say for the first eight or ten years that I knew it, I really can't say that I paid any particular attention to it, but just from common observation I haven't noticed much difference. (Folio 6214.) Well, I have noticed as a matter of course it is sometimes higher and sometimes lower, and it has been that way ever since I have been there. In some years there is less water and in some years more.

COMPLAINT.

No, sir, I never heard any of the farmers up in my county on their farms at home away from town saying anything about their lands being injured in that way, and that is what I had reference to when I was talking with Mr. Gregg. I want that understood. No, sir, I haven't talked in reference to this case within the last year with people, outside of the talk I had this morning with counsel or the gentlemen you sent to me. Never a word.

No, I never had any reason to believe that my land was being so injured by the actions of anybody as to lead me to take any interest in the prosecution of any suit for the purpose of stopping what was being done. (Folio 6229.)

W. G. MALONE, farmer, Wichita, Kansas.

From the place where I am farming I can see the water in the Arkansas river. I can see the place where it is, only at certain seasons. I can see the water at the present time. But in going around on my farm and attending to the work I am in position to see it at different times, and that has been true nearly all of the years since 1878. This land is on what we call first bottom.

FLOW.

Taking the river over a period of say ten years last past and comparing the average flow of it for the ten years with the average flow for any earlier period, I will say I never thought there was any material

change in it. In my judgment I think it is about the same river in character and flow that it has always been since I knew it. I have no reason to think it should not be.

GROUND WATER.

As to whether from any of my observations I have had any occasion to believe that there has been any material or permanent change in the water level under this farm since I have been there, I will say if there has been I have never noticed it. (Folio 6236.)

CROPS.

In regard to the productiveness of this land now, as compared with earlier times, I would say I don't think it raises as good crops now as it did formerly, but you take a piece of new ground and you will have as good success with crops as we did in the former years. I think the deterioration in the soil has a good deal to do with the fact that we don't raise as good crops now as formerly, and that deterioriation is caused by the constant taking off of the land and not putting anything back. (Folio 6237.)

J. R. BROWN, farmer, Wichita, Kansas.

GROUND WATER.

As to the general water level of the country along the valley of the Arkansas river in the neighborhood

of where my farm was located, and where I now live, as compared with the general water level of the ground water in the earlier years, I would say I haven't noticed any change. In Colwich, there where we lived, we bore with an auger to the sand, then we have to stop. Whenever we strike that sand we strike water and we can't bore any farther, and then we drive from that down. On the river bottom I have put in several wells there, drive wells, and we then drive a hole down to the sand and sledge the pipe down as deep as we want it. I never saw any difference. (Folio 6251.)

CROPS.

As to the crops raised in that general section about Colwich now as compared with those raised say in the '70s, '80s, or '90s, taking the three periods, over say ten-year periods, taking it on that light, sandy soil, we don't raise as good a crop as we did in the '70s. Take it on the heavy, black soil,—take the farm exactly south of me, owned by D. E. Breese, I thing he raises just as good a crop now as he did then on the sandy soils. But that sandy soil has deteriorated. It has worn out. It is certainly true that the sandy soil wears out in three or four years. But aside from the natural deterioration of soils by farming, I think there is nothing further than just the deterioration—the wear—of the soil. I can't see any difference. On my place, my brother-in-law is on there now, he raises good crops in places and in certain years he raises good crops—of course not as good, as I said, on that sandy soil, as the first was.

Virgin soil for two or three years raises the best crops. The sandy soil was the best we had at that time. (Folio 6252.)

VALUE.

Yes, sir, I have had a pretty wide acquaintance there through that country up there with the lands and the people. As to the values of land in that section now, compared with earlier times, I would say in earlier times we didn't consider our lands worth much of anything. They have doubled and trebled. Lands have gone away up in the last few years. No, sir, there hasn't been any time since I have lived in that section that the average price of farm lands has been as high or higher than it has been for the last few years. (Folio 6253.)

GROUND WATER.

Yes, sir, I know what the underflow is, but I don't hardly know how it affects my land. My judgment has always been that there hasn't been much change in the underflow. I have shallow wells. I have had windmills with only a twelve-foot pipe on and never exhausted the water. I could not pump it dry. I will say there hasn't been any change. Yes, sir, the underflow rises and falls according to the condition of the river. Yes, sir, after the river has been up a time the underflow is higher, and after the river has been low for a time the underflow is lower. I couldn't say how far back from the river the under-

flow extends. My judgment is, just as I spoke some time ago about boring at Wichita for a well, we would strike that sand and we could get water. We would have to drive from there. I never experimented with it and don't know whether, after the river has been up for some days or weeks, we find the water level higher than after the river has been down for a number of weeks. Yes, sir, the underflow extends back through the land that I did have and would rise and fall with the river, but I don't know that it extends to any other land. (Folio 6264.)

CLIMATE.

Yes, sir, my observation has been confined to the land where I now live. As to whether we had good crops in certain years or not, it depended upon the rainfall. If we got hot winds it didn't matter if the wheat stood in the water, it would get our wheat. There were several years when we did not have hot winds, but not always. Yes, I believe the closer to the water the roots of crops were the better the crops would be, if it were not for the hot winds. (Folio 6265.)

HENRY LOSBOUGH, farmer, Wichita, Kansas.

GROUND WATER.

As to taking one year with another over a period of a whole year and four or five years, as to whether there is any difference in the level of the water underneath the ground in my locality in later years, as com-

pared with earlier years, I would say no, sir, I don't think there is, for the simple reason—it is this: I have got a well—to explain that thoroughly. It is about twelve to thirteen feet, and I have never seen it here that it could be exhausted. The pump can run night and day, and you couldn't exhaust it at any time. The driest time it could be run night and day and it would be impossible to exhaust it. I know that. And back a few years ago we had an awfully dry year. I think that would be a pretty good test of it. (Folio 6274.)

CROPS.

As to the effect of constant farming on the productiveness of the land, I would say, well, taking crops off the land, I think any person would think that successive crops taken off the land would weaken the land. We know it does; we don't guess at that. Yes, sir, that has been our observation and experience. (Folio 6275.)

Allowing for the natural deterioration of the land, as to its productiveness now, compared with earlier years, I would say my land, by fertilizing it, and keeping it up, I don't think it is as productive as it was when I first broke it, when the sod on the land was new, but by keeping it up I think it holds along fairly well. But so far as the climate or weather conditions are concerned, either rainfall or ground water, as to whether the land has become any less productive in the late years than in the earlier years, I would say I think it has; that is, I think when the land is newer it produces bigger crops. But

if I made allowance for that deterioration, as to whether there is any change in the productiveness of the land because of any change in weather conditions, I will say, no, sir, I don't think there has been. (Folio 6276.)

VALUE.

As to the values of land in my locality now, compared with what they have been in the earlier periods, I would say there is quite a difference since I bought that land. When I bought it I gave about $15 per acre for it. I suppose I could sell it now for from $45 to $50 an acre. Land is selling now all the way from $45 to $60 an acre.

CHARLES SHAFFER, farmer, Wichita, Kansas.

FLOW.

As to the flow of the river within the last three to five years, compared with the earlier years that I knew it, I would say I can only express an opinion. (Folio 6349.) I can't see that there is much difference. Taking ten years, from 1869 to 1879, and comparing the average flow of the river during those years with the last ten years, I would say, well, I have crossed the river at various times in the last thirty-six years I have lived here, or nearly that, and I can't see that it makes much difference. One year it is high and another it is low. It has been so ever since I remember.

CROPS.

As to the crops in these later years on this land of mine as compared with those earlier years, say from 1879 up to 1889 and 1890, I would say my land, that which I own on both sides of the Little river, I don't know but what it produces fully as well as when it was first broken up. (Folio 6350.) I think the nearest point of my land from the Arkansas river would be perhaps five or six miles. Taking that land as to the crops grown there naw as compared with earlier years, I would say from a money standpoint it has improved. That is, I get more money out of it than I did then.

FLOW.

As to the average flow of the Arkansas river in my locality covering a period of the last ten years, as compared with the flow of that river in the same locality for a period of ten years in the earlier times, as near as I can judge from the overflow I have had on my place within the last eight or ten years there has been very little difference in the flow of the water. I have been overflowed oftener in the last ten or twelve years than I was in the twenty-five. It overflowed this last rise in the river, a portion of it anyway. Aside from special times of high water, as to the average flow for a period of ten years, as compared with any former ten years, that is, for the total ten-year periods, I don't know as I could notice any difference in the amount of water. My land is first bottom, and I have been engaged in farming that same land since 1877. (Folio 6380.)

CROPS.

As to the crops produced on the land now, compared with those produced in the earlier years, taking a period of five or ten years in the later period and comparing it with a like length of time in the earlier period and making allowance for the natural deterioration of the land, if any, I should think there was about an average. Of course you take it in the early part of my settlement there, we had a period of seasons that were excellent for crops. Of course my land was all fresh at that time. Yes, sir, I think it is true that new land, other conditions being equal, will produce more than old land. Well, I don't know as there has been any falling off of crops in the later years as compared with earlier years because of a change in water conditions, either the ground water conditions or the precipitation, other things being equal. (Folio 6381.)

F. L. DOFFLEMEYER, farmer, Wichita.

VALUE.

As to the values of land in my part of Sedgwick county now, compared with earlier times, as a matter of fact all lands through that section of the country are much higher now than they were fifteen or twenty years ago, certainly, yes, sir. (Folio 6382.)

CROPS.

If the river were high during a summer, but we didn't have any rainfall scarcely, as to whether I

would be able to raise any crop or not, I would say, no, sir. (Folio 6383.) Yes, sir, I have raised good corn crops on that place when the river during a dry season was low—some of my best crops. But in that instance there was plenty of rainfall. As to whether I have ever raised any poor crops when the river was high, I would say I did last year. I had too much of it.

FLOW.

There has been considerable water running in the river for the last twelve months. It sometimes, opposite my place, goes dry—stands in pools. You can walk across it in places dry-shod, but I don't think—in fact, I know—that it has not stopped running in the last year, and, in fact, I don't know but what I might say within the last two years. (Folio 6384.) I think the first time in my recollection that I saw the Arkansas river dry so that I could walk across it dry-shod was the season I came here, in 1874. I think, likely, the river practically stopped running. And then, again, in the year 1879 or 1880. In 1877 and 1878 we had considerable water in the river; in fact, I don't believe it stopped running either one of those seasons. That was in 1879 or 1880, I think, and, perhaps, a time or two since that, a little later on. Well, I don't know as to its having gone dry or getting extremely low more in the last ten or twelve years than it did in the first ten or twelve years I knew it. I don't know that it has. I don't think it has. Yes, sir, the stream is a stream or high and low water—a very changeable stream. The character of the bed of

that stream is sandy, and the character of the banks underneath the sub-soil is sandy. The banks are not so high. It is a stream with low banks, yes, sir.

COMPLAINTS.

Yes, sir, I am pretty well acquainted with the farmers up and down the Arkansas river in that vicinity. As to whether, before the commencement of this suit, I ever heard any of the farmers along the Arkansas river in my vicinity complain that their lands were being made less valuable or less productive by the sinking of the general level of the ground water, I would say that I don't remember that I ever did in my locality. (Folio 6385.)

FLOW.

As to what has been my observation in the last thirty years as to whether we would have a certain cycle of years in which the flow would be greater, and then a cycle of years in which it would be less, I would say, well, I don't know, but that has been the history to some extent. You take it in 1876, 1877 and 1878, we had considerable water; then it dropped off; and my recollection is that there was perhaps pretty nearly the same number of years we hadn't the flow of water—that is, floods to the extent that we had during those years. (Folio 6403.) I think, perhaps, maybe it runs a little that way. As to how the last five years would compare with some of the earlier five-year periods, I would say the last three years we have

had a pretty good flow of water in the river; that is, it has never gone dry to my knowledge, and I would think that period would compare favorably with the three-year dry periods. Perhaps there would be more water in the last three years that I speak of than there would several years ago in the three years of a moderately dry season or dry period, if I understand your question right. Yes, sir, the last three years compare more nearly with one of the wetter three-year periods than with one of the drier three-year periods. The last two years we have had perhaps more continuous flow of running water, or a bigger flow of water, than we have had for several years past.

JOSHUA RUSH, farmer, Wichita, Kansas. (Folio 6406.)

I live in West Park township, this county, about ten miles from Wichita. That is up the Arkansas river. My place is in the neighborhood of four miles from the Arkansas river. I am farming for a living and have been farming all my life. I first came to Sedgwick county in 1879. I commenced farming in this county in 1880. The land that I first farmed was in Union township, right in the northeast corner, and that was forty or forty-five acres that I farmed. The river cut off a little bit of the corner of it. Yes, sir, that was bottom land. My house was about 150 yards from the Arkansas river. I grew corn, principally, on that land for two years. (Folio 6407.)

FLOW.

As to the flow of the Arkansas river during the first seven or eight years that I saw it, compared with

the last seven or eight years, I can't see any difference between the river in the first seven years and the last seven years, and that applies to the dry seasons of the year as well as to the time when they have the rises in the river. As to whether or not I depended at all on the rise or fall of the Arkansas river when I was farming those bottom lands or raising my crop of corn, I don't depend upon anything else but the rainfall for my crop, and I didn't depend upon anything else at the time I was on that farm, no, sir. (Folio 6409.)

COMPLAINT.

Yes, sir, I know some farmers pretty well up and down the river there next to where I farm, and I know a number of them living along that river now, yes, sir. As to whether before the bringing of this suit I ever heard any of those farmers complain that their crops had been injured by the falling of the water level or underflow, I would say, no, sir, and I didn't hear them complain that their land was injured in any way by the falling of the water level. (Folio 6410.)

J. M. HALL, farmer, Wichita, Kansas. (Folio 6425.)

I am sixty-four years of age, a farmer, and live at Sedgwick, Kansas. I have been farming thirty-five years this last spring. (Folio 6426.)

FLOW.

Yes, sir, I have been living there continuously since 1889. Yes, I was frequently upon the Arkansas

river during those earlier years and also during the later years. As to the flow of the Arkansas river near my land during the nine years from 1870 to 1879, as compared with the nine years last past, I would say my opinion is that we have had a stronger flow for the last nine years. By that I mean the river has not been dry so often in the last nine years as it was from 1870 to 1879. I am excluding floods in the river, yes, sir. (Folio 6427.)

GROUND WATER.

Yes, sir, we put those down from year to year and changed them from place to place during many of the years I have been there, and in driving those wells at the different times I had not noticed any material variation in the depth at which we struck the water. I noticed no difference. (Folio 6428.)

COMPLAINT.

Yes, I am pretty well acquainted with the farmers up and down the river where I live, especially with the old settlers. There are a good many new ones there that I don't know. As to my ever having heard any of those farmers complain to the effect that their crops are or have been injured by the lowering of the water level or the underflow, I have not, and I never heard any of them complain to the effect that their land has been damaged or made less valuable by the lowering or falling of the underflow.

CROPS.

I raise principally corn, wheat, oats and rye, and as to how these crops compare now with the crops in the earlier years on the same land, taking it acre for acre, I think they compare very favorably. (Folio 6429.) There are some pieces of land that are getting a little worn and thin, but as a general thing the crops on them are equally as good as they were at an earlier stage. And what is true of the lands I have just spoken of was true of the lands adjoining me in my vicinity.

VALUE.

As to the values of lands along the river there for the last twenty years, as compared with past years, I would say they have almost doubled in the last ten years. As to the average value of farm lands like mine through that part of the country, bordering upon the Arkansas river, per acre, I should say they are worth about $40 an acre for an improved farm. (Folio 6430.) No, sir, I don't think they have ever been higher in value than that. I think the present value is the highest they have ever attained.

CHANNEL RIVER.

I am familiar with the river from near Bentley to Mount Hope. As to what caused the river to narrow, my opinion is that by keeping out the fires and preventing the burning of the growth of vegetation

the trees and grass have been allowed to grow up stronger, and it has naturally narrowed the channel. That is my opinion. (Folio 6431.)

JOHN WILLIAMS, farmer, Wichita, Kansas. (Folio 6446.)

I live in Eagle township, and we call it twenty-five miles from the city of Wichita. My residence is a mile and a quarter from the Arkansas river, but my land runs down to it. I have as much as five miles of frontage on the river, anyway. I have right in the neighborhood of or something over 3,000 acres of land in that vicinity, and 800 acres in Reno county. I believe we live about half way between here and Hutchinson, on the river. I moved my family there thirty-two years ago last month, and I have been living there ever since, farming and stock raising. In handling my stock and going over my lands I have had opportunity to see the Arkansas river from day to day and from week to week. In the last thirty-two years I was at it very frequently. (Folio 6447.) Sometimes every day, and sometimes it may be a week, probably. I wouldn't say every day. But I have been pretty constantly right there.

FLOW.

As to the average flow of the Arkansas river in the vicinity of my lands compared for the last ten years with an equal period of time in the earlier years, I would say there hasn't been much difference to me. If there is a difference I haven't noticed it much. If anything, we had more dry beds years ago than we

have had the last ten years. Yes, sir, my judgment as to the flow is based upon my observation extending over this period of time. I have had chances to know something of that. I have put down a number of wells in different places. (Folio 6448.) I go, I should judge, from four to eight feet to water, on the average, on my land. Taking it for the average time since I have been there, I would say the general level of the ground water, the first water under the ground, is about the same. No, sir, I couldn't say that there is any difference, really.

CROPS.

As to the effect the farming of land for many years has upon its productiveness, I would say, of course it wears land some to continually crop it, and in all new countries the land is not taken the best care of. But take new land now, it would be as good as new land was in those days. As to my own land, and as to the effect of constant cropping and the lack of fertilization on it, I would have to consider that it does deteriorate some. (Folio 6449.) Making allowance for the natural running down of the land from constant cropping, as to the productiveness of the land in late years compared with that of earlier years, I would say there has nothing unnatural occurred, not to me. Nothing unnatural.

VALUE.

As to the values of land in my locality at the present time, and as to how they have been for the

last two or three years, compared with what they were at earlier times, I would say the land is considered worth more. The places are held higher, and if there is a place sold it has brought more money than it used to.

J. R. SITES, farmer, Wichita, Kansas.

GROUND WATER.

Yes, sir, I have heard concerning the so-called underflow in this country, and I have been familiar with the conditions of the land along the river known as the first and second bottom lands during this period. (Folio 6466.) As to the effect of the underflow upon the crops, and particularly upon corn crops, I would say that I think so far as the underflow is concerned it has no effect at all upon the crops, whether it is high or low. I think not. As to how far back the underflow affects the lands, and what particular lands on the river, I will say, outside of the sloughs along the river and the very low land I don't think it affects crops at all. It is my experience that it don't.

CROPS.

As to whether I ever had any experience with new land or what is commonly called virgin soil, and with land that has been cropped for a number of years, I would say, yes, sir. (Folio 6467.) As to whether in my judgment land deteriorates or improves with constant cropping, yes, sir, every man knows that land that is continually cropped, the crops take the nutri-

ment out of the ground to a certain extent, and it deteriorates from year to year unless it is kept up by fertilization of some kind. Taking into consideration this deterioration of the soil, as to the possibility of raising as good crops, and particularly corn, in the last five years, as compared with the first five years I was in this country, I would say it would have to be under very favorable circumstances—more favorable than it was when the land was new—if you raise as good a crop after the land has been farmed a great number of years. Taking into consideration the natural deterioration of the soil of which I spoke, upon the same land, as to the possibility of raising as good crops, including corn, in the last five years, as compared with the first five years I was in the country, I would say they are fully as good.

GROUND WATER.

I came here with a distinct belief that I could raise a crop from the underflow alone, but I have gotten over that years ago from my experience. There is an underflow, but it has no effect upon crops unless we have surface rains. (Folio 6469.) The underflow is near the river. I don't think it affects the ground very far from the river. In this country it never comes within two feet of the top without surface rains. I think I know the conditions all up and down the valley from here to Larned. I have been here for twenty-one years and have paid attention to these things. No, I haven't observed the underflow as far up as Larned. I haven't been out of the county. I have not observed it in Reno county. (Folio 6470.)

I have not been up that way. The flow of the river was not as great ten years prior to last year as it has been in the last ten years.

SIMON H. LOUGHLIN, farmer, Wichita, Kansas. (Folio 6477.)

I live about eighteen miles up the river from here, and about a hundred yards from the Arkansas river. I have lived there since the 12th of February, a year ago, and I have lived in that locality since 1872. That is the year I was born, so I was raised in the Arkansas valley.

FLOW.

As to the average flow of the river for the last ten years, compared with the average flow of the river in the same locality for the ten years preceding, according to my observation I would say I don't believe there is any perceptible change.

As to the kind of land upon which we have worked for the last twenty years, being bottom or upland, part of it is what is called second bottom and part of it is first bottom land.

CROPS.

As to the effect upon land to have it continued in the same crops, any one crop takes certain particles to nutrify or build up that plant and the ground contains only a certain amount of it, and if you don't put something on there that produces that, you will finally use it all up and your crop will not produce.

There is a running down or deterioration of farm lands in the locality where I live, and there is in all of it. (Folio 6480.) Aside from the deterioration naturally incident to farming land, as to its productiveness now, compared with what it was fifteen years ago, I would say I have noticed this, that, after breaking the land up and farming it until the crops begin to get poor, they will change and rotate the crops, putting in alfalfa or something of the sort, so that their crops will be practically as good as they were when the land was first broken, and if they don't do that they are poor.

JACOB LUMBERT, farmer, Wichita.

CROPS.

Yes, I have been living on my present place ever since 1886. I have been in pretty close contact with the Arkansas river during all that time. I have been there off and on all the time. (Folio 6499.)

FLOW.

As to the flow of the Arkansas river from 1877, taking a period of ten years, and comparing that flow with the flow of the river during the last ten years, leaving out of consideration very high floods, I don't know as there is a great deal of difference. (Folio 6500.) There was one year, after I first came back here, the river was entirely dry. From the Little river up to Hutchinson there was not a drop of water in it, but there was water running in there at Hutch-

inson from Cow creek. From Hutchinson down to the Little river there was not a drop of water; they couldn't hardly get any to drink. That was in an early day.

COMPLAINT.

Oh, yes, I am middling well acquainted with the farmers in the vicinity in which I am living along the river, most of them. (Folio 6501.) I have been there long enough. Yes, sir, I have known them all these years; most all the time I have known some of them. As to whether, prior to the beginning of this suit, I ever heard any of them complain that their crops had been injured by the falling of the water or underflow, I would say, no, sir. I have never heard any of them complain to the effect that their lands had been injured.

As to the crops raised on my land, I would say I always raised good crops whenever we got rain. I raise corn. That is what I generally raise—and a few potatoes. As to the crops of corn generally, I would say, of course I have been here two years in the earlier times, and then I was gone four years. Those two years we raised a good crop, and had plenty of rain all the time. I said it was a good thing we raised a good crop, or we wouldn't have stayed here, but it was not because the river raised at all. We had plenty of rain. (Folio 6502.) And after I came back we had an awfully wet season that year. As to the crops of corn in those earlier years, compared with the last five or six years, I don't think there would be any difference, only the ground is worn out and not so good as it used to be, where it

has been worked thirty years. If the same crops had been raised on the same ground for a long period of time, as to whether or not the strength is taken out of the soil—yes, sir, it will do that.

Leaving out of consideration hot winds and grasshoppers and the difference in the strength of the soil, as to how my crops in recent years compare with those in earlier years, they have been just as good as they have ever been, if we get rains in time. If we get rains on them I don't believe there are any hot winds. If we get enough to keep the ground wet there is no hot winds.

VALUES.

As to the values of land now, compared with what they were in the '70s and '80s when I bought mine, I gave about $1,300 for the 160 acres. I have had it nineteen years, and probably it will fetch me about $50 an acre, and will be about $8,000, yes, sir. Yes, sir, this is the highest price we have ever known land on the upland to sell for. That has gone up just the same as bottom land. (Folio 6503.)

S. M. BELDING, farmer, Wichita, Kansas.

FLOW.

Referring to the last five years I lived on the farm, from 1890 to 1895, it is a pretty hard matter to be exact about that, but I think we had fully as much water in those years as we used to have in the others. I can't remember so positively about that. I have noticed these things sometimes. (Folio 6514.)

COMPLAINT.

I never knew of any complaint—I can't think of any—about there not being enough water in the Arkansas river. I think there is about as much as there used to be. I think there has been fully as much water during the last five years I lived upon my farm as in the first five years.

CROPS.

Referring to those lands farmed by farmers who return a portion to the soil, and comparing with the crops raised by them in the first ten years, with the last ten years, I would say I don't think the comparison is there at all. (Folio 6518.) The first few years the land was stronger and it produced for one about as well as for the other, but within the last ten years it has been favorable to well cultivated farms.

Now, in speaking of that class of farmers who till the soil in the shape I speak of, that is, by fertilizing it, turning under their alfalfa, etc., and comparing the crops raised by that one class of farmers in the first ten years with the crops raised by the same farmers in the last ten years, I think the farmers now are doing just as well as they did then.

OSCAR L. WINTERS, retired farmer, Wichita, Kansas.

FLOW.

As to the condition of the river in those early days, leaving out the questions of floods, I would say

the river was wider then; that is, the flow was. The high period would have floods at certain times along about June, as we would generally have a rise in the river. In the fall of some years the river would be low and in some years it would be dry, except in holes. No, sir, that was not an unusual occurrence to see it dry in those earlier years. I have seen it dry several times. I had occasion to cross the river often, yes, sir, and I was upon it a great deal in those early days. I had kin folks over there, across the river, and crossed it frequently during those years, and I was in constant touch with it during all that time, yes, sir, and have been ever since. Taking a period of ten years, say, from 1869 to 1879, and leaving out the floods, as to how the flow of the river in those days compared with the flow of the river in these last ten years, I can say that I have seen the river dry more in the first ten years—that is, more times, than in the last ten years, and as to the amount of water flowing during those earlier years, taking one year after another and comparing it with the various years of the last ten years, I think the channel is deeper now. (Folio 6542.) Of course, the river is filled in, but I should think there was very nearly as much water on account of the channel being deeper.

Taking the last three or four years, on an average, and comparing them with three or four years in those earlier times, I would say we had a great deal of water a few years ago and last year. Yes, sir, the last two years we had a good deal of water all the time, comparatively speaking.

COMPLAINT.

Yes, sir, I know the farmers quite well up along the river where I have been living, and I am acquainted with most of the old settlers, especially throughout that vicinity. (Folio 6546.) As to whether, prior to the bringing of this suit, I ever heard any of the farmers of that locality complain to the effect that any of their lands had been injured by the falling of the underflow, I would say I think not. I never heard any of them complain to the effect that their crops had been injured by the falling of the underflow, no, sir.

VALUE.

As to the value of lands along the river there generally in the early days, as compared with the present time, I would say they are worth more now than they ever have been. Yes, sir, they have been increasing in value all the time for the past ten or fifteen years. No, sir, they have never been as high before in the history of that country as they are now.

J. W. SITES, farmer, Wichita, Kansas. (Folio 6570.)

I live eight and a half miles from the city of Wichita, and within about three miles of the Arkansas river, and I have lived in that locality, with the exception of three years, since 1877. Yes, sir, I have owned land there since 1877, and own land there at this time. I am interested with my brother there in 800 acres of land. My brother is George T. Sites, and we are both engaged in farming.

As to my opportunities since 1877 for observing the Arkansas river and its flow in Sedgwick county, I would say in coming to town once a week, or probably twice a week, or sometimes when I was hauling grain, I would come every day, and that has continued generally from 1877 up to the present time.

As to the average flow of the river over a period of the last ten years, compared with the average flow of the river over a like period in any of the earlier times I have known the river, based upon my observation and judgment, I would say the average has been greater for the last ten years, and especially for the last eight or nine years, than it ever was since I have been here. (Folio 6571.)

My land runs up into the foothills a little on the west side, but the principal part of it is first bottom land, with the exception of what is called the Big Slough. That is lower than even the first bottom land.

Yes, sir, I have had opportunities for discovering the depth we have had to go in order to strike water on my lands, and my opportunities for observing the level of the ground water have extended over the period since I have been on that place. We have opportunities in various ways. The best opportunity I ever had was in setting in curbs to water stock. I just dug down and set in a curb and left it open on one side, in the slough ground there, so that the stock would go right there and put their heads in and drink right out of the curb. (Folio 6572.) As to how the water level in my locality beneath the surface of the ground compares now with what it was when I first knew the country, I would say I can't tell any difference.

As to what I depend upon to make a corn crop or other crops on my land, I would say we depend upon rains. When we have continued dry weather, of course, at that time of the year it is always hot, and we have hot winds, and it injures the grain.

CROPS.

I never could tell that the influence of the river made any difference on my crops at all. I saw it when we had continued dry weather and hot winds that, although the river was full of water, our crops would become injured just the same as though the river were dry. I couldn't tell any difference in regard to the crops when we had good and seasonable rains but a dry or low river. We had good crops when we had the rains, and when we had drouth and hot winds it injured our crops.

As to whether lands that have been farmed for a number of years run down and deteriorate, I would say, yes, sir, and especially under some circumstances where it is extremely wet, or anything of that kind, and the farm is out of condition, it will just simply exhaust the land. (Folio 6573.) Making allowance for any deterioration by reason of farming, as to whether there has or has not been any change in the productiveness of my lands since I have been farming where I now am, I will say, no, I can't see any difference scarcely. If we have good seasons we get a good crop the same as we always did on that land that has been kept up.

COMPLAINT JOKE.

As to whether or not, before the commencement of this suit, or before the agitation was commenced in Wichita, I ever heard any of the farmers in my locality complain of their lands becoming less valuable or productive because the river was being dried up or the level of the ground water was falling, I never heard any complaint from the farmers. (Folio 6574.) As to having heard the farmers talk in my locality in reference to this matter since the suit has been commenced, and as to the advantages or disadvantages of the suit as to them, I would say, well, the farmers generally take it as a kind of a joke. They look on it as a kind of a farce. Nine-tenths of them, at least, that I have talked with, do.

I am interested in 800 acres of land. It is on the west side of the big river, and the nearest part of it is two and a half miles, and the farthest part about three and a quarter miles back from the river. (Folio 6575.) No, it is not all first bottom land; it runs back into the hills on the west side. I have 160 acres of land up by Maize that is all in the bottom. The water on my land at the nearest place is about two and a half to three feet, and at the farthest about twenty feet.

J. T. SITES, farmer, Wichita.

I live eight miles northwest of here, in Park township. I am a brother of the Mr. Sites who just left the witness stand. We farm and work together, yes, sir, considerably. We own our land together, and between me, my brother and his wife, we have 800 acres, and that is located about two and a half miles from

the Arkansas river, and about eight and a half miles from Wichita. (Folio 6587.)

As to my opportunities since I have been living in that locality to observe the flow of the river, I would say I have seen the river every week, sometimes two or three times. I have lived in that locality since 1878. (Folio 6588.)

FLOW.

As to the flow of the Arkansas river for the last ten years, compared with the flow for a like period in any of the earlier times, from my observation of the river from week to week since 1878, I would say it seems to me there has been more water going down the river in the last ten years, especially eight or nine years, than there was in any years previous to that time.

As to my opportunity for observing the level of the ground water underneath our land, I have dug several times to put down drove wells. As to whether there has been any change in the water level on my land since I located there, I don't see that there has been any.

CROPS.

When land has been farmed for a number of years, as to whether it shows any wearing or deterioration by reason of farming it, I would say I think it does where it is farmed in corn continuously. Making allowance for any deterioration of that kind, as to the productiveness of my land in late years, as com-

pared with the productiveness in earlier years, I would say I think it is just as good. No, sir, there have been no changes in the water conditions that have caused my land to fail in productiveness. (Folio 6590.) As to whether I have noticed anything as to the kind of crop I could get on my land in a year when the rainfall was bad, but the river was up, I would say we got little crops when the rainfall was bad, always. We have had good crops whenever the rainfall was seasonable.

COMPLAINT.

As to whether I ever heard any of the farmers prior to the commencement of this suit farming lands in my locality complain that their lands were made less productive or less valuable by reason of a change in the river or a change in the level of the ground water, no, sir, I never did hear any one say so. As to whether since the commencement of this suit I have had occasion to talk with any of the farmers in my part of the country as to the suit and any benefits that might accrue to them by reason of it, I have never talked with the farmers a great deal about it. I never did seriously.

JOKE.

It was always in a kind of joking way, as the farmers all seemed t obe joking about it. That is about all I heard. (Folio 6591.) No, sir, none of the people active in this suit came to me to talk or ask for aid in it.

L. B. DOTSON, farmer, Wichita, Kansas. (Folio 6603.)

I live about ten miles northwest of Wichita, and my home place is now a mile from the Arkansas river. Yes, sir, my farm adjoins the river, and I have a frontage of about half a mile on it. I own 460 acres of land, and have lived there since 1871, and have been acquainted with the Arkansas river that long. I am engaged in farming and stock raising.

FLOW.

As to what opportunity I have had from week to week to see or observe the Arkansas river, I see it every few days. (Folio 6604.) I work a great deal right on the river, and that has been true ever since 1871. As to the flow of the river during the last ten years as compared with the flow, on the average, for any other ten years before that time and since I have known the river, I would say I rather think there has been more water in the river in the last ten years on an average generally than before. I should think there would be. As to the dry or very low spells of the river being as often during the last ten years, or lasting as long as in the earlier years, I would say I hardly think they were. I hardly think they would last as long. I don't think there has been any material or noticeable change in the river, taking it over a period of ten years, since I knew it. I suppose I go, to the first water on my land, something like four to six or seven feet, and I am on what is known as the first bottom. That is, part of my land. I raise all kinds of crops—corn, oats, wheat, millet and every-

thing of that kind that is raised on a farm. (Folio 6605.)

GROUND WATER.

There has been no change in the general water level under my land since I have been there that I could ever notice. That is, only in a real dry time the water would be quite as close to the top of the ground, but as to the general average there is no difference. No, sir, there has been no change that would last over a year in late years from what there was in earlier years. None that I could ever tell.

CROPS.

After land has been farmed a number of years I think it shows a running down or deterioration from being cropped in the same crop to some extent. Making allowance for that running down that comes naturally from cropping land a number of years, as to the productiveness of my lands, compared now with what it was when I went there, I would say it is about the same. No, sir, there has been no change in the water conditions that has affected the productiveness of my land either for better or worse. I think not. None that I could tell. (Folio 6606.)

COMPLAINTS.

As to whether before the commencement of this suit I ever heard any of the farmers up in my neigh-

borhood who farm land there complain that their lands were being made less productive or less valuable because of the drying up of the river or the sinking of the water level, no, sir, I haven't heard any particular talk about it amongst the farmers. Yes, sir, I have heard it amongst others. Mr. Oldfather was the first man I ever heard mention it. Mr. Oldfather is a farmer. I don't know how much interest he has taken in it, but he is the first man that mentioned this business to me. (Folio 6607.) And I have had some little talk with Mr. Harrison. He is a farmer.

A. J. SHORE, farmer, Winfield, Kansas. (Folio 6633.)

I am forty-six years of age, and have lived in Palestine township, Sumner county, Kansas, during the last thirty-four or thirty-five years. I live within a mile of the river now. (Folio 6634.) From 1870, when we settled up there, to 1882, I think, I was right on the bank of the river. I was raised, you might say, right on the bank of the river.

CROPS.

As to the crops raised by me during the period of 1880 to 1890 as compared with the last period, from 1890 up to 1900, in the general average of bushels per acre, I would say they would compare favorably, I think, and by that I mean about the same, to take each ten years in a lump. (Folio 6637.)

Comparing the average crop per bushel for the last five years with the period from 1885 to 1890, I couldn't say. From 1885 to 1890 I was located just a

mile back from the river. No, not where I am now. Upon the place just north of where I am now. Comparing the crops raised on that land for a period of five years with the crops raised during the last five years on the adjoining land, I would say I don't think we had as good crops right in then as we are having now. (Folio 6637.)

FLOW.

Yes, sir, I have been familiar with the river and with the amount of water in it during all these years, and as to my best judgment in regard to the volume of water in the river for the five years I was there, as compared with the last five years, I think it would be pretty much the same with the last five years that we have had. Comparing the volume of water in the river—and by that I mean not the highest or the lowest time, but the general flow—for the first ten years as compared with the last ten years, I would say, I believe, to take the first ten and the last ten, I think there was more water the first ten than the last, to take the ten years in a lump. (Folio 6638.) Comparing the years from 1880 to 1890 with the last ten years, from 1895 up to the present time, I couldn't hardly fix dates on that. There was a period of low water and dry seasons that we have had, and I don't know just exactly when it was, but there was a period or two when the river ran low—two or three years, maybe. Comparing the period from 1885 to 1895 with the period from 1895 to the present time, I believe there has been more water, maybe, in the last ten years than in the first ten.

GROUND WATER.

Yes, sir, I have heard of the so-called underflow, and have heard it discussed, and as to whether this underflow has materially changed during the time I have lived along the river in Sumner county, I would say, to take it back from the river, I don't think it has been affected at all. That is our observation in putting down wells. As to what I mean by the phrase "back from the river," I mean, I will say, when you get back either half a mile or a mile from the river, take it along the river, if the river comes up, for a ways back, it will push back and seep up, but we have put down wells there at any and all times, and we have never seen any effect as far back as a mile. (Folio 6639.) As to whether we have found any effects in the permanent change of the underflow, I will say, no, sir, I think not. I would think the height of the so-called underflow for the last five years is the same as it was in the period from 1880 to 1885.

W. G. CARSON, farmer, Winfield, Kansas.

FLOW.

As to how the average flow of the river for the last ten or twelve years in my locality would compare with the average flow of the river there for the ten or twelve years preceding, I think there has more water flowed there in the last ten years. As to whether there has been as many overflow periods, and as to whether they have extended for as many weeks or months in the last ten years as they did in the ten

or twelve years before that, I will say it averaged lower the first ten years. (Folio 6665.)

VALUE.

As to the values of lands in my locality at the present time compared with the values of lands in the same locality in the earlier years, I would say they are higher at present.

CROPS.

When land is constantly farmed in corn or in the same crop of any kind it will show a deterioration after a period of years; yes, sir. Whatever you manure you can see the improvement in crops of any kind. Making allowance for any natural running down of the land from constant farming, as to how our lands will compare now in productiveness with what they were twenty or twenty-four years ago, we don't raise so good crops as we used to, especially corn, and that is caused by the elements that make corn being used up—taken away in grain—because of the raising of crops on the land of same kind; yes, sir. In my opinion, that change in the soil has affected the productiveness of the land. That accounts for it, in my estimation. No, sir, there is no change in the water conditions either above the ground or below that has caused that running down. (Folio 6667.)

COMPLAINT.

As to whether I ever heard any of the farmers in my locality, before the commencement of this suit, or before it began to be talked about, complain that the productiveness or value of their lands had been injured or decreased because of the river flowing less water or because of the sinking of the water level in the ground, I would say I never heard it spoken of at all. (Folio 6668.)

S. D. LEMASTERS, farmer, Winfield, Kansas.

COMPLAINT.

Yes, I have lived in that neighborhood since 1871 and am quite well acquainted with all the farmers in that vicinity and up along the Arkansas river. As to whether I ever heard any complaint from any of those farmers in that vicinity prior to the bringing of this suit to the effect that their crops or lands were injured by the falling of this water level, I would say I can't call to mind any instance. (Folio 6685.)

CROPS.

We raise corn, wheat, oats and a few watermelons on this land. Leaving out of consideration the wearing of the land by keeping the same crops on it for many years, our crops in the last few years as compared with the earlier years, I think, are about the same. I have noticed no material difference

worth mentioning. In growing our crops we depend upon the rain. My wheat crop last fall was fair. No, sir, we didn't pasture any of our wheat. (Folio 6686.) We pastured last year, a year ago, and have had several falls lately that we have had plenty of pasture. We most always pasture our wheat land when we get any fall growth on it so that we can pasture it.

GROUND WATER.

As to whether or not there have been any times when we have had lack of rain and still had high waters in the river when the waters helped our land, I would say, not to my knowledge. We never depend on the underflow, or sheet water underneath, for crops, and there is no one in our vicinity that does, to my knowledge.

VALUE.

As to the values of lands in these years as compared with the earlier years, I would say there is quite a change. Lands are worth a great deal more now than they were years ago, and these values have increased several times, and decreased and increased, but the last three or four years land has been going up pretty rapidly and the present values of lands differ. (Folio 6687.) There are some quarters there that would bring $10,000, and from that to $12,000. No, sir, there has never been a time in the history of that country down there, so far as I know, that land values have been as high as they now are.

ERNEST C. MORRILL, Winfield, Kansas. (Folio 6699.)

I live at Oxford, Kansas, and am thirty-eight years of age. I have become somewhat familiar with the Arkansas river, as it flows through Sumner county, by living on it from the spring of 1871 up to the present time. I have lived during this time from a little less than half a mile to a little over half a mile from it. My land reaches within 200 yards of the river bank, and the other land, upon which I was raised, reached to the river bank. I lived there on the land that borders on the river bank from the time I was six years old until I was twenty-four, and the balance of the time, lacking four years, I lived on the farm where I am now. (Folio 6700.)

FLOW.

From my knowledge of the river gained in this way, as to the average amount of water in the river up until 1880, from the time I can first remember, as compared with the water in the river for the last ten years, I would say that during that time we had an uncommonly high flood. That was in 1877, I believe, to the best of my memory. Otherwise from that, I see practically no difference. As to the average volume of water in the river during the ten years fro m1880 to 1890, compared with the last ten years, probably there was more water the last three years; otherwise about the same. (Folio 6701.) As to the average amount of water during the last three years compared with the average volume of water during

any other three years of the time that I can remember, I would say the last three years it has been a great deal higher than in any other three years I can remember of, with the exception of 1877, but the general average was about the same.

E. W. PHILLIPS, farmer, Winfield, Kansas. (Folio 6724.)

I live about twenty-five miles from Winfield, Kansas. My postoffice is Mulvane, in Sumner county. I have lived in that locality since October, 1870. I live in Mulvane now. That is about a mile from the Arkansas river. My lands are about three miles from Mulvane. My old home farm runs to the river. It has 160 rods of river bank. I pre-empted that claim in 1870, in the fall, and laid claim to it in 1871, in January. My business in the last thirty or forty years has been farming, and I am still interested in the farm and in farming.

At the time I was living on the farm I was elected trustee in my township. (Folio 6725.) I assessed the township for two years, and in the fall of 1880 was elected to the Kansas legislature from the Eighty-third district, and that district at that time covered all west of the Arkansas river in Sedgwick county, and that is where my farm is, yes, sir. I believe I live about half way between Oxford and the city of Wichita, on the Arkansas river.

FLOW.

As to my opportunities for observing the Arkansas river since 1870, I would say I have stock in my

pasture there, and the watering privilege is on the river. I have a watering gap made at the river and am there frequently looking after that. Yes, sir, I have seen the river, generally speaking, from week to week, since 1870, excluding periods when I was at the legislature. I have seen it at various times in each year since 1870, yes, sir. As to the flow of the water in the river for the last ten or twelve years, as compared with the flow of the water in the river during the first ten or fifteen years that I knew it, I would say that I can't see any particular difference. (Folio 6726.) It is about the same. There hasn't been enough change either one way or the other so as to make it materially noticeable. There have been extreme periods, when it has been high and extreme periods when it has been low, but I haven't taken particular notice of it, of course; but as a general thing it is about the same.

CROPS.

I should say the majority of my land is about eight or nine feet above the water level of the river at ordinary stages. As to what I depend upon to make a crop on my lands in the way of water, I would say, the seasons and rains, of course. I never have observed that the condition of the river, whether it be full or low, has had any influence on my crops, no sir. If we have a season when the rains are poor or unseasonable, we have a poor crop, and I can't see that that would be changed, even though the river should be running quite a good, full stream. I can't see that there is any difference. If we fail to have rain our crops fail. (Folio 6728.)

Lands naturally deteriorate, or wear out a little, as they are continued from year to year in the same crops, and will not produce as much as when they are new. (Folio 6729.) Making allowance for this natural deterioration, as to whether my lands are as productive now as formerly, I can't see any difference.

VALUES.

As to the values of land in my locality as compared with the values of the same land at any other time in which I have known them, I will say the land has considerably advanced in price all through our section of the country. I have 160 acres of land there now.

COMPLAINT.

As to whether before the commencement of this suit or before the agitation just preceding its commencement I have heard the farmers there complain that their lands were being decreased in value or made less productive by reason of the drying up or shrinking of the river or the falling of the water level underneath the ground, I will say, no, sir, I never have.

MOSES NIXON, farmer, Winfield, Kansas. (Folio 6739.)

I am fifty-two years of age, past, and a farmer by occupation. I am farming on the Arkansas river bottom, and have been farming all my life. I was raised on a farm. I own 400 acres of land near the

Arkansas river. The first bottom land runs back there about a mile and a quarter. My northeast corner of that quarter just lops off into low bottom a little.

FLOW.

I have crossed the Arkansas river pretty nearly every week, I guess, sometimes twice a week there, during all the years I have lived there. Taking the ten years running, say, from 1881 to 1891, and comparing the flow of the Arkansas river with the last ten years, leaving out of consideration the floods, I would think the average flow would be about the same. (Folio 6741.) There is not much difference, I think.

COMPLAINT.

I am acquainted with most of the farmers up and down next to the river, and I meet them every once in awhile. As to my ever having heard any of them prior to the commencement of this suit complain of the falling off of the water level under their lands so as to injure their crops or their lands, no, sir, I have never heard of it. I have never heard them say anything about it. I don't think there is much difference in the crops in later years as compared with the earlier years, leaving out of consideration any ground that is poor by reason of the crops grown. Yes, sir, we raise practically the same now as formerly.

CROPS.

Yes, sir, I knew the farmers up and down there on the first bottom and have seen from time to time the condition of their lands, and I don't see that the crops on their lands are much different now from what they were in the earlier years. They are about the same. Of course, some years are a little better and some a little poorer, and I think that depends on the rainfall.

VALUE.

Lands have been advanced in value in the last ten years as compared with the earlier years. (Folio 6742.) The lands in that vicinity, including the bottom lands, have never been higher in value than they are now. Yes, sir, they are now the highest value they have ever been since I have been there.

G. R. HAMM, farmer, Winfield, Kansas. (Folio 6749.)

I am fifty-three years of age, and I came here to Oxford, Kansas, in 1878, or three miles south of Oxford. Yes, sir, that is on the Arkansas river. Since I came here in 1878 I suppose I have seen the Arkansas river two or three times a week. There may be some weeks I wouldn't see it. I live a little west of the Arkansas river, about a mile and a half, and, of course, I couldn't see the river from where I live, but I go down probably once or twice a week, and some weeks I wouldn't go at all. Yes, sir, I am pretty well acquainted with the surrounding country and with the lands and the crops that are raised on the lands.

FLOW.

I don't see that there is very much difference in the average flow during the first ten years I was here compared with the different years during the last ten years, and I don't know as there is very much difference between the volume during the first five years I was here and that of the last five years. Of course, the last year or two the river has been pretty high. I don't think I ever saw the river as high as it was last year, and I don't see that there would be much difference in the river during the various years from 1890 up to the present time, compared with the same number of years prior to that. (Folio 6751.)

CROPS.

As to the crops, particularly the corn crops, raised in the first ten years, compared with the same crops raised in the last ten years in the locality in which I live, including my own, I don't believe there is very much difference. Of course, there are some years better than others, and we have had it that way in the first years, and we have it that way in the later years.

HENRY HAHN, farmer, Winfield, Kansas. (Folio 6755.)

I am fifty-seven years of age, and reside in Oxford, Kansas, at the present time. I have resided in that vicinity, except one year I was in Oklahoma; it is now twenty-five or twenty-six years. I have farmed all of the time, and I have been in the livery business

for fifteen years off and on, but farmed at the same time. The first seven years I had a farm and a livery barn at Oxford and farmed this side a mile and a half from town about five years. During the time I have been engaged in farming and in the livery business, as to how often, on an average, I have seen the Arkansas river in that vicinity, well, I couldn't say. I have crossed it every day twice for five years or nearly, twice a day or night. I should say it would average two or three times a week, I expect, putting it all together. For five years I crossed it every day twice.

GROUND WATER.

I never sank any wells on my own land. I have had one on my farm. I had 100 or 240 acres of land that ran up on the hill, I guess about fifteen acres of high land. My building spot was up there about thirty or forty feet, and my well I think was twenty-four feet deep—the open well. I had plenty of water in it during the five years I lived there. No, sir, I never noticed any rise or fall in that well when the river rose and fell. As to my having any general knowledge of wells being sunk on the first and second bottoms, I will say, on my father's farm and my brother's farm I know about what they said when they sank them. But from my own knowledge I never knew of anybody having to change a well to get water. I don't see that there is any difference. (Folio 6758.)

CROPS.

I have been in the livery business off and on for sixteen years, and while in that business I have had

occasion to drive teams over the country hundreds of times, and I have been in the habit of doing that, yes, sir, during all seasons of the year, and from my general knowledge gained in that way as to the average crops raised during the last five years as compared with the earlier years, as to the number of bushels of corn per acre, I don't see any difference particularly. (Folio 6759.) They had wet seasons when there was too much water, and they didn't raise hardly anything. It was too wet. Otherwise it didn't make much difference. And I think that average would apply to the last ten years as compared with the earlier ten years, yes, sir. That would be about my observation.

JOHN THOMPSON, farmer, Winfield, Kansas. (Folio 6764.)

I live two and a half miles from Oxford, on the Arkansas river, and about a mile from the river. The land I am working runs to it. It is bottom land. I have been engaged in farming in that locality ever since 1878.

FLOW.

Yes, sir, I have had an opportunity to observe the flow of the river since 1878 in a general way from week to week and month to month when we have high waters. Well, I saw the river every once in a while since 1878, and as to the amount of the flow of the water in the river for the last ten or fifteen years, compared on an average with the flow of the water during the first ten or fifteen years I knew it, I would

judge it is about the same. In the last few years we have had higher water. For the last ten or fifteen years it will average up as much if not more than for the same period in earlier years. (Folio 6765.)

CROPS.

As to the general crops in the country in later years as compared with what they were in the earlier years, making allowance for the natural deterioration that comes from farming land twenty-five or thirty years, I would say there is not much difference.

COMPLAINT.

As to whether before the commencement of this suit I ever heard any of the farmers in my section of the country complain that their lands were being made less valuable or less productive because of the drying up of the river or the sinking of the level of the water in the ground, I would say, no, sir, I don't know as I ever have.

J. M. BUFFINGTON, farmer, Winfield, Kansas. (Folio 6767.)

I live at Oxford, Kansas, and we call it ten miles from Winfield. I settled on the river in that neighborhood on the 25th day of April, 1870, that is, in Sumner county, and my land ran right down to the river.

Yes, sir, I have been engaged and interested in farming lands in that locality ever since 1870, and

am still interested in farming lands. I have now 306 acres in one place and about fifteen in another on the river. There is a tract of about twenty-five acres of that land that runs up to the river in two places. I have got a little over twelve hundred acres of land in the country around there, and I think I have about nine hundred acres in crops this year. A little over that. Yes, sir, I live in the town of Oxford now, but I take a general supervision of these farming lands and overlook them from time to time. I have two sons, and the majority of the land they farm, and I farm some. Yes, sir, I am engaged in the stock business as well. (Folio 6768.)

FLOW.

From my opportunity of observing the river, as to how the average flow for the last ten years would compare with the average flow during the first ten years, I would say a man is liable to forget, but it appears to me there has been more water in the last ten years than there was in the first ten. The average flow of the river for the last ten years is fully as much, I think, as for any other ten years since I have known it. I couldn't say there is much difference in the width of the channel in the locality where I live now as compared with the earlier days, from the fact that in some places it is narrower and in some places it is wider, but I don't think there is very much difference. (Folio 6769.)

CROPS.

Outside of any natural running down that there might be from farming land for a number of years,

as to how the land in the vicinity of Oxford would compare in productiveness now with what it was twenty-five years ago, I would say I don't see much difference. New land will naturally produce a little more. If you plow up new land now it produces a little more. (Folio 6773.)

VALUE.

The market values of lands now are the highest they have ever been.

But outside of the low places or sloughs on the general farming land I don't see that the water level has much influence on the crops, if any. (Folio 6774.)

COMPLAINT.

Yes, sir, I am acquainted with nearly all the farmers through that section of the country about Oxford. I know all their names. I know every man in the country, and I guess they all know me. I am sixty-one years of age. As to whether before the commencement of this suit or before the agitation just preceding its commencement I ever heard the farmers in my locality along the Arkansas river complain that their lands were being made less valuable or less productive because of the drying up of the river or the sinking of the underflow in the ground, I would say I never did, no, never. (Folio 6775.)

I have never seen but very little difference at any time from 1870 up, but only just the dry and wet seasons. I don't think it changes. The longest low

period that I ever saw was in 1874—the grasshopper year. My memory can't count all the particulars for the ten years. I just take it as a general thing. (Folio 6787.)

Excluding the flood periods, I think there is very little difference in the average flow of the river during the last ten years from the average flow of the river during the first ten years I knew it, except one year it was so very dry, and then it was lower than it ever was, and a longer dry spell. (Folio 6788.)

L. H. HILL, farmer, Winfield, Kansas. (Folio 6789.)

I am sixty-one years of age, and I came to Oxford or in the vicinity of Oxford in February, 1870, and stayed there about three months and went to Eldorado and stayed there until the next spring when I came back again and stayed at Oxford until the next spring. I preempted land there, and that was my headquarters until the spring of 1874. During that time I had ample opportunity to see the Arkansas river, by fording it, because there were no bridges. In a general way, probably I crossed the river during those four years once a month, taking it as an average, for four years. I afterwards returned to that vicinity, in April, 1889, and since that time my home has been in Oklahoma. During that time I saw the Arkansas river probably on an average enough to make once or twice a year or something like that, up to the present time. A year ago last August I came to Oxford, and that has been my home ever since. I have not been gone probably more than a month or six weeks at a time since a year ago last August. I came there in 1903. During this time I saw the river

two or three times a week and sometimes every day. During the first three or four years I was here in the '70's, we had very high water. I happened to be here at the time. (Folio 6790.)

FLOW.

After being gone sixteen years of course the old Arkansas looks the same, except that the farmers have put out trees here and there and as I ride along on the train I can't see the river quite as well as I could in the first place. But after I got up there at Oxford everything was perfectly natural everywhere I went, and it is to-day just the same as then, except out in the bottom there are big trees where there was no timber before. The river looks as it always did. In February of 1870 I crossed the river two or three times on horseback. The water was probably two feet deep in the deepest place, and it seems to me it was just about that deep last fall, just about the same depth at the deepest place. The river in some way rises up and drops down and drains off and gets very low. It always did, and has the same habit yet as far as I can see. (Folio 6791.)

JOSEPH HAHN, farmer, Winfield, Kansas.

I am a farmer and have been ever since I have been a man. Yes, sir, I farm in this county near the town of Oxford on the east side of the Arkansas river. There is about 210 acres of land in that farm, and I have been there ever since 1879. (Folio 6798.)

FLOW.

As to the flow of the Arkansas river, taking the average flow during the first ten years I was there and leaving out of consideration high floods, as compared with the last ten years, I should judge it was about the same. I couldn't see much difference if any; and I would say the same during the other ten years I was there. As to whether my crops have been as good during the last five to ten years as during the earlier days, I would say they have, yes, sir. (Folio 6801.)

COMPLAINT.

Yes, sir, I am pretty well acquainted with the farmers out in our community, but only just in my own neighborhood. Yes, I know them up and down the river for a mile or two on each side, and I have known them since the early days. As to whether or not I ever heard any of those farmers complain that their crops had been affected or hurt or their lands injured in any way by reason of the water level falling underneath their land, I would say, no, sir. As to the value of lands now compared with earlier times, I would say it is big. They have never been higher than they are now, no, sir.

A. D. PENNINGTON, farmer, Winfield, Kansas.

I am a farmer, and was raised on a farm, and have farmed all my life since I was big enough to work. I am living six miles northwest of this town, in Vernon township. (Folio 6807.)

FLOW.

As to how the flow of the Arkansas river during the first nine years I was there, excluding high flood periods, compared with the average flow of the river during the last nine years, I will say, sir, to answer short, I would call it about tht same, in my estimation. As far as I can judge there is no material difference. (Folio 6810.)

COMPLAINT.

Yes, sir, I know the farmers pretty well up and down the river there in that community, the biggest portion of them, for a few miles. As to whether prior to the bringing of this suit I ever heard any of those farmers complain that their crops had been injured or their lands had been made less productive by the falling of the level of the water underneath those lands, I would say, no, sir, I never heard any of them complain of it. (Folio 6811.)

VALUE.

As to the value of lands in that community, taking both first and second bottom lands, I don't know as the second bottom lands have ever been higher, but the low bottom land is not as high as it was a few years ago, since the flood of last year. The flood hurt that some. But taking all of the lands up and down the river there in my community, they are higher now than they ever were before, yes, sir.

CLIMATE.

Yes, sir, we farmers out there depend upon the rainfall for our crops. No, sir, we never had any good, fair crops out there unless we had the rains for them. That is true in the first bottom land as well as on the second bottom. When I came here in 1871 the biggest part of the bottom was all taken and there was some apparently yet to be taken in this country. (Folio 6819.)

T. C. PRICE, farmer, Winfield, Kansas. (Folio 6821.)

I live in Winfield, and my principal business is farming. I am fifty-three years of age. I moved into Winfield two years ago in January; before that time I lived on my place six and a half miles west here. The Arkansas river is just a fraction from my lower 40 there. There is 20 acres between it and the river bank. I bought that in February, 1884. Previous to that time I was a renter along the Arkansas river in that locality. I have had an acquaintance with and observation of the Arkansas river since 1872, and from that time down to the present time I have had an opportunity to observe the flow of that river, and I saw it during that period from week to week or month to month. (Folio 6822.)

FLOW.

As to the average flow of the Arkansas river for the last ten or twelve years as compared with a like period in the earlier years that I knew it, I would say,

cutting out the year 1873, that was dry, and cutting out the year 1877, that was the flood, taking the year 1904 out, that was the flood, the fall of 1902, which was dry,—barring them, the fall and the summer, the dry years and the flood years, count them out, I think there is a little more water in the last ten years than in the first ten years; and if you leave those in I think it would average just as good or a little better in the last ten years. Yes, sir, 40 acres of my land that I purchased in 1884 was on the low bottom and 30 acres was on the second bottom, and then it runs right up onto a ridge, about ten acres, where I built. My wells were bored there; I had no occasion to dig any. Yes, sir, I dug several wells on the low bottom. (Folio 6823.)

GROUND WATER.

As to there being any change in the water level in later years compared with the earlier years, I can't see that there has been. Of course I am well aware that the river is in what we call a "V" shape and when the water rises there it comes back up. Of course it takes quite a little while for it to back up. It is hard to run water up hill. Of course when this flood comes out it throws it up into a "V" shape. But speaking of just the average water level, or the depth at which one would have to go down for water, I don't think there has been any perceptible change in the twenty years on my land.

VALUE.

Yes, sir, I think the constant farming of lands has a tendency to run it down or deteriorate it to a

certain extent, and making allowance for the natural deterioration or running down from farming, I would say the land is just as productive now as it was when I went there. It is just as good. (Folio 6824.)

COMPLAINT.

No, sir, I never heard any of the farmers in my locality before the commencement of this suit in 1901 complain that their lands were becoming less valuable or less productive because of the drying up of the river or the sinking of the general water level of the country.

J. S. OVERLEY, farmer, Oxford.

VALUES.

As to the value of my land at the present time, I should judge it is worth about $50 an acre, and it was not much different in value five years ago. Yes, sir, land has improved in this county during the last five years. It has improved some in value. I expect close to one-fourth. No, sir, there has been no time since I located here when lands were higher than they are now. I don't think they have been any higher. I hope the prospects for the future are good. (Folios 8236 and 8237.)

JASPER SUMMERVILLE, farmer, Oxford, Kansas.

CROPS.

I have 300 acres in my farm and about thirty acres of that is bottom land and I raise on the bottom

land all kinds of crops, that is, a variety of crops—wheat, oats and corn. That is, I mean on the uplands. I have never raised anything but corn on the bottom lands. I have been planting corn on these bottom lands for fifteen years. No, sir, I haven't rotated it with grasses or any other crops. I have been raising it continually. As to whether I think that of itself would have a tendency to decrease the yield, well, it might have a tendency to. (Folio 8251.)

FLOODS.

I believe in 1877 was the first time I ever saw the lands between me and town flooded, and the next time was in 1878. We had two years of high water right in succession there. As near as I can recollect, the lands at those times were flooded from two to four weeks. (Folio 8253.)

CLIMATE.

As to whether my experience has shown me that this is a river that is quite likely to have but very little water in it or a shortage of water for a period of drouthy years and then for a period of three or four years to have a great deal more water in it, I would say I have noticed those conditions, but to take the length of time and the years, I couldn't give it. I have noticed that condition. Yes, sir, I have noticed that we have more water for a period of three or four or five years, and then less water for another period of three or four or five years in succession. (Folio 8254.)

W. F. MAINS, farmer, Oxford.

My father-in-law's name was C. C. Shore. He is dead now. Yes, sir, I am pretty well acquainted with Mr. Canfield, and the land I am speaking of belonging to Mr. Shore is about two miles from Mr. Canfield's place. His place is two miles south and half a mile west of Mr. Shore's.

Yes, sir, I have been by them frequently and I have harvested wheat a time or two on Mr. Canfield's land. I think the last time was about seven years ago, and that year he had pretty fair crops. It averaged up well, yes, sir, that year it did. And then four years ago I harvested some there and he had some pretty good wheat and some that was not so good then, but it averaged pretty good, yes, sir. (Folio 8306.)

COMPLAINT.

As to whether I ever heard any complaint from him that his crops were not as good of late years as during the former years, I never heard him say anything about it. (Folio 8307.)

JEREMIAH PATTERSON, farmer, Oxford.

EFFECT OF CULTIVATION.

Yes, sir, the cultivation in this country has largely increased, so far as the acreage is concerned, since I settled here, and with the cultivation of the country the soil probably absorbs more water than

it did in its original condition. As to where the water goes that sinks into the ground, I don't think it goes to supply this underflow, no, sir. I think the vegetation and such things as that take up the rainfall. I don't think any of it goes into the underflow. I don't think it has anything to do with it. As to whether that water got back into the river before the vegetation, I will say, there has always been vegetation here, but before cultivation a great deal of it went into the river. (Folio 8344.)

ROTATION OF CROPS.

Yes, sir, they have been cropping the bottom lands to corn for a great many years here. That is their main crop. They have been putting those lands into corn for twenty-five or thirty years. They may sometimes change the crop, raising wheat, oats and such things, but they are so much better for corn that they generally raise corn. As to whether I take any stock in the theory of the rotation of crops being necessary to successful farming generally, I think it is better to change it sometimes. I do it about every third crop. (Folios 8347 and 8348.)

JAMES BENEDICT, real estate, Arkansas City, Kansas.

VALUE.

I am in the real estate and insurance business. (Folio 938.) Farming lands have advanced from $20

to $40 an acre the last twenty years, since 1884, and are now $40 or $50 an acre perhaps in particular locations. I should judge there has been an increase in the last ten years. The bottom lands have increased in value during these years. I judge they have increased as much as the uplands. There was never a time to my knowledge when the bottom lands were of greater value than at the present time. During the boom period I couldn't tell what land was worth. People went wild on farm lands. (Folio 939.)

W. H. MITCHELL, mayor of Beloit, Beloit, Kansas.

CLIMATE.

Yes, sir, I said I thought there had been an increase in the flow of the river. As to what I attribute that to, my judgment would be that it is perhaps a gradual western trend of the rain belt. The rain is more than it used to be when I first went there. I think the lands that have been broken up and tilled hold the water and have a tendency to keep up the flow of the river, that is, to hold the water back in its flow and let it out gradually. That is my opinion about this. (Folio 8485.)

G. W. VEALE, farmer, Topeka, Kansas.

CLIMATE.

I don't really know what the records show since they have been kept, but there appears to be plenty

of rain in the state for all agricultural purposes, if it is properly distributed, so that we are not having any more dry seasons, so much so that we could not raise crops, since 1874. I would think that my experience does show that usually we have three or four years that may be termed wet years, not flood years, but wet years, followed by a period of dry years, to a certain extend. The seasons don't run regularly. There are wet seasons and dry seasons. I don't know how they would run as to whether it would be two or three or four years, but we have more rain, of course, in some seasons than we do in others. (Folio 8375.)

CLIMATE.

Yes, sir, I said in answer to a question propounded by counsel for complainant that I thought there was rather more water in the river of late years. As to what I attribute that increase to, I think we have had more rain. That it the general impression among the farmers, and that the rainfall in the state of Kansas, as a general proposition, is increasing rather than diminishing. Yes, sir, we depend for the growing of our crops upon the rainfall, and for the supply of the water in the rivers, principally. (Folio 8376.) I know nothing of the irrigation business at all. Yes, sir, for good wheat we depend upon the winter snow.

As to what I attribute this general increase in the rainfall of which I have spoken, I would say that we farmers have attributed it to the cultivation of the lands, the plowing and cultivation of the lands. (Folio 8377.)

GEN. FRANK B. BALDWIN, U. S. ARMY.

VALUE.

I have been more or less familiar with the river from 1866 up to the present time. I went clear down to a little town called Chilocco, where there is an Indian school, by railroad. We traveled a good deal of the distance along the Arkansas river, and of course in traveling east on that road I traveled over that portion of the road in the night, and coming back I could see everything on the return trip in the daytime. (Folio 2527.) I was interested in seeing the improvements of the country, and that led me to watch the conditions and note them carefully, with no idea other than to see if there were any changes in the river and in the conditions.

From my observations extending over this long period of years from 1866 up to the present time, I do not note any material changes in the condition of the river as to water since 1885, as compared with the conditions existing prior to 1885. I don't think I have seen sufficient difference to even call to my mind the comparison. I know that the country along the Arkansas river has advanced in every way perfectly marvelous—absolutely surprising. I would not have given a nickle an acre for the whole country west of Wichita when I first went out there, and now you see fine big farms and everything growing there that will grow in any place in the world. In my judgment, there is just as much water in the Arkansas river on the average between Great Bend, Kansas, and Rocky Ford, Colorado, as there was prior to the year 1885.

(Folio 2528.) I can say that without any hesitation whatever. I can add to that, that I make this statement backed up by the wonderful improvement in the country along the Arkansas river.

FLOW.

As to the months of July, August and the early part of September, we always expected to see water in the river during that time. I never saw the time in those months when the water was not running in the Arkansas, but it sometimes got rather low—just a little rivulet sometimes. It usually commenced to get low from the early part of September, and on up until the next June. I am speaking now of the time when it got perfectly dry in places. This did not occur frequently during the months of July and August.

HENRY HEGWER, Denver.

CLIMATE.

In the early days when that country was hard and dry it was an American desert, and it never rained only when it poured down. It came in great storms sweeping over the prairie at such a rate that you couldn't hold your hat, and we would have to back the wagons up against the storm to keep the wind from blowing them over. These conditions do not exist any more in these days. Of course thunder storms come over the country, but they are mild and most generally small, little drizzling rains, to what

they were then. I attribute this change to the cultivation of the soil, the irrigation of the lands, the planting of trees and orchards, and everything of that kind, holding the moisture, instead of the surface being dry and hard like a paved street, run over by the buffalo, for then when it did rain and these great storms would sweep over the country the water would run off into the gullies and streams and down into the creeks and rivers and the next day the wind would be blowing the sand the same as before. (Folio 2545.)

ANNUAL RAINFALL AT DODGE CITY.

In 1875.....10.69 inches
In 1876.....15.40 inches
In 1877.....27.89 inches
In 1878.....17.96 inches
In 1879.....15.43 inches
In 1880.....18.12 inches
In 1881.....33.55 inches
In 1882.....13.14 inches
In 1883.....28.56 inches
In 1884.....30.36 inches
In 1885.....23.71 inches
In 1886.....19.35 inches
In 1887.....15.71 inches
In 1888.....22.94 inches
In 1889.....19.17 inches
In 1890.....11.72 inches
In 1891.....32.34 inches
In 1892.....19.66 inches
In 1893.....10.12 inches
In 1894.....12.60 inches
In 1895.....20.31 inches
In 1896.....19.87 inches
In 1897.....21.58 inches
In 1898.....31.46 inches
In 1899.....28.45 inches
In 1900.....20.76 inches
In 1901.....16.06 inches
In 1902.....17.70 inches
In 1903.....15.27 inches
In 1904.....17.19 inches
In 1905.....25.96 inches

Counsel for Kansas then makes the following averages, selecting the years and omitting others to suit their caprice:

					Inches.
Average rainfall for		16	years—	1875 to 1890,	20.85
"	"	15	"	1891 to 1905,	20.62
"	"	6	"	1882 to 1887,	21.79
"	"	5	"	1888 to 1892,	21.17
"	"	5	"	1895 to 1900,	23.17

MATERIAL ALLEGATIONS IN THE AMENDED BILL.

I desire to review the amended bill for the purpose of showing what are the material allegations.

1. The state of Colorado is alleged to operate and control some ditches and reservoirs. (Page 62 of Record.)

2. The river in its course after leaving the mountains is a navigable stream under the rules and regulations of the United States. (Page 63, Record.)

3. The lands adjacent to the river in the state of Colorado are of such a nature that they are not saturated to any appreciable extent by the waters diverted from the river and its tributaries. (Page 63 of Record.)

4. The volume of water in the river flowing from the state of Colorado into the state of Kansas was formerly very large, being upwards of two thousand cubic feet per second. (Page 63 of Record.)

5. There is no underflow to said river in the state of Colorado except in and under the bed of said river. (Page 64 of Record.)

6. The water which flows in the river from the state of Colorado into the state of Kansas furnishes almost the entire supply of water for the underflow in the valley of said river in Kansas. (Page 64 of Record.)

7. The flow of water in the river bed is of great value to the people in Kansas by reason of the fact

that the evaporation from the river tends to cool and moisten the surrounding atmosphere, thereby greatly promoting the growth of vegetation and the health of the people. (Page 65 of Record.)

8. The evaporation at the east end of the valley in Kansas is about 60 inches, and at the west end about 90 inches. (Page 65 of Record.)

9. The exhaustion of the flow in the Arkansas river will render the uplands unavailable for grazing. (Page 65 of Record.)

10. The agricultural population of the Arkansas valley in Kansas is about 50,000 persons, and the urban population is about 60,000. (Page 66 of Record.)

11. The value of the bottom lands in the state of Kansas is from $5 to $100 per acre, and the average value of all of said lands is not less than $25 per acre. (Page 66 of Record.)

12. By reason of the wrongs complained of in the bill, the value of said lands has shrunk many millions of dollars and the revenues of the state greatly diminished. (Page 66 of Record.)

13. Near Dodge City, in the county of Ford, the state of Kansas owns a tract of land comprising 126.56 acres, used for the maintenance of a Soldiers' Home. This land is used for raising grains, fruits, grasses, etc., and is greatly damaged by the diminution of the flow in the Arkansas river. (Page 68 of Record.)

14. In the county of Reno, near Hutchinson, the state owns 640 acres of land on which it has built an industrial reformatory, and the crops are

greatly damaged by the diminution of the alleged underflood. (Page 68 of Record.)

15. The state of Colorado by its laws and judicial decisions has upheld the division of water and the exhaustion of the natural flow of the river within its borders to the great damage of the state of Kansas and its people. (Page 70 of Record.)

16. The appropriations from the Arkansas river amount to 4,200 cubic feet, and from the tributaries, 4,300 cubic feet, and the average flow of the Arkansas river in the state of Colorado does not at any point exceed 700 cubic feet per second, and the average flow of the tributaries does not exceed 700 cubic feet per second. (Page 70 of Record.)

17. The state of Colorado has, since the year 1890, at and near the city of Canon, in said state, constructed a great canal for the purpose of diverting water from the Arkansas river. (Page 72 of Record.)

18. The state of Colorado intends and is threatening to build other canals similar in size and character and design for the purpose of diverting water from the Arkansas river. (Page 72 of Record.)

19. The state of Colorado has erected large reservoirs for the purpose of storing the natural and flood waters of said river. (Page 72 of Record.)

20. The state of Kansas and its inhabitants have been greatly damaged and have been irreparably injured by the diversion of water from said river in the state of Colorado; that wells which should furnish water for domestic use have become dry; that crops, trees and vegetation languish and decline and in many places wither and perish. (Pages 73-74 of Record.)

21. The channel of the river above the city of Wichita becomes dry and the sand, dirt and debris drift in, and when the flood waters come, an overflow is caused thereby, to the great damage of the adjacent lands and property. (Page 74 of Record.)

CONCLUSION.

I have included extracts from the testimony of General Frank D. Baldwin, United States Army, for the reason that he is entirely disinterested, and what he states is entitled to great weight. Besides, army officers are taught to observe the conditions and resources of a country, because they become material in the conduct of military affairs.

I have included the extract from the testimony of Hon. Henry Hegwer, Denver, Colorado, because he gives a graphic description of the rainfalls in the early days in Kansas, previous to the cultivation of the soil. Other witnesses have referred to this same matter, but I do not think they have done so as clearly as that witness.

In copying these extracts, I have referred to the folios and have refrained from changing the wording in any respect whatever.

Excluding all that may be said by witnesses in Colorado and witnesses from other states and from territories, I submit that a consideration of the testimony produced by citizens of Kansas alone makes it clear,

First. That the values of the land have greatly increased.

Second. That there has been no failure of crops caused by irrigation in Colorado.

Third. That the climatic conditions have improved.

Fourth. That the general prosperity of the towns and agricultural regions has become constantly better.

Fifth. That the allegations concerning the loss of revenues are untrue, because of the increase in wealth and the enhanced value of lands.

Sixth. The preponderance of evidence refutes the alleged injury to the lands belonging to the Soldiers' Home at Dodge City.

Seventh. There is a total lack of testimony as to any injury to the Industrial Reformatory at Hutchinson.

Respectfully submitted,

N. C. MILLER,
Attorney General of Colorado.

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DEC 22 1906
JAMES H. McKENNE
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SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1906.

No. 3, Original.

THE STATE OF KANSAS, COMPLAINANT,

vs.

THE STATE OF COLORADO ET AL.

ANSWERS TO QUESTIONS PROPOUNDED BY THE COURT IN RULING ON THE DEMURRER OF COLORADO, AS GIVEN IN ORAL ARGUMENT ON FINAL HEARING, BY CLYDE C. DAWSON, OF COUNSEL FOR COLORADO.

JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C. 24404

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1906.

No. 3, Original.

THE STATE OF KANSAS, COMPLAINANT,

vs.

THE STATE OF COLORADO ET AL.

Answers to Questions Propounded by the Court in Ruling on the Demurrer of Colorado, as Given in Oral Argument on Final Hearing, by Clyde C. Dawson, of Counsel for Colorado.

Before entering into a discussion of the facts in this case, it would seem entirely proper to call attention to the questions propounded by the court at the time of the ruling upon the demurrer, and to suggest the answers thereto, as drawn by the representatives of Colorado from the evidence introduced in the case.

1st. Whether Colorado is herself actually threatening to wholly exhaust the flow of the Arkansas river in Kansas.

There is an entire absence of evidence by the complainant showing or tending to show, that Colorado is in fact or in contemplation actually threatening to wholly or at all exhaust the flow of the Arkansas river in Kansas, or any

place else; while the evidence offered by the defendant establishes the fact beyond question that Colorado as a State is taking no water from the Arkansas river, and is not threatening to do so in the future.

2d. Whether the "underflow" is a subterranean stream flowing in a known and defined channel, and not merely water percolating through the strata below.

This subject is one requiring expert knowledge and careful investigation. The complainant introduced in the case no witness who claimed to be, or was, an expert upon this subject, while the State of Colorado and the intervenor, the United States Government, introduced numerous witnesses who had made long and exhaustive study of the subject of underground waters, who had studied the particular conditions existing along the Arkansas river and arrived at the unanimous conclusion (and so stated in the evidence) that the underflow was not a subterranean stream flowing in known and defined channels, but was in fact merely water percolating through the strata below.

3d. Whether certain persons and corporations in Colorado must be made parties hereto.

This question has in part been answered by the complainant making in its amended bill various corporations in Colorado parties defendant; and if the complainant seeks any decree in this case which shall attempt to adjudicate any rights as between ditch owners in Kansas and Colorado, then we believe it is clearly established by the evidence that still other persons and corporations, both in Colorado and Kansas, will be necessary parties to this suit, and that the bringing in of such persons would oust the jurisdiction of the court, if that has not already been done by the bringing in of the corporation defendants.

4th. What lands in Kansas are actually situated on the banks of the river?

I am not able to say exactly what lands are expected to be covered by the terms of this question. If it means those lands which might be affected by the flow, or lack of flow, in the river, then it is established by the testimony of the experts introduced, both by Colorado and the intervenor, that the maximum acreage which could be affected by such flow would not be in excess of 72,240 acres, and in all likelihood the amount would be very materially less; and of these acres which might be affected, the greater number would be situated along the valley of the Arkansas, in that part of Kansas which has ample rainfall in ordinary years to produce crops successfully without relying upon any other source of water supply.

5th. What lands, either in Colorado or Kansas, are absolutely dependent upon water therefrom?

As to the lands in western Kansas dependent upon water for irrigation from the river, it is impossible to say from the evidence in this case, because of the fact that the complainant offered no evidence showing the amount of land actually under irrigation in western Kansas, and the testimony generally shows that the ditches in western Kansas had been so poorly managed as to be effective for a very small part of the lands actually lying under them, and that in many instances these ditches and their use had for many years been abandoned. Along the Arkansas river in Colorado there are now at least 350,000 acres of land actually under irrigation and cultivation which are absolutely dependent upon the waters of the Arkansas river to make them productive, and a lack of water from this river for any number of seasons would return these highly improved lands to the desert.

6th. The extent of the drainage area of the Arkansas river.

The drainage area of the Arkansas river in Colorado is 26,000 square miles; in Kansas, 20,000 square miles, and outside of these two States, 140,000 square miles, making a total drainage area of 186,000 square miles.

7th. The possibility of the maintenance of a sustained flow through the control of flood waters.

The answer to this question would depend largely upon the definition given to flood waters. If the term shall be construed to mean high water, or a flow in excess of the normal, then a sustained flow can largely be maintained by the storage of such waters in reservoirs, and, better still, by their application for irrigation to the lands lying toward the head of the stream, the soil in itself acting as the best reservoir and the greatest equalizer of the flow of the stream below the point of application to the soil. If the term shall be construed to mean excessively high water, such as comes in cloud-bursts and violent storms upon the head-waters of the river and its tributaries, then such flood waters cannot to any great extent be controlled until they have passed beyond the mountains, and possibly beyond the Colorado-Kansas line—this because of the fact that in the upper reaches of the river the fall is so great that the violence with which the waters run off in the stream is more or less destructive to headworks constructed for the purpose of diverting water from the stream, and because the waters so falling run by in an extremely short space of time.

Answers to questions propounded by the court in ruling on the demurrers of Colorado, as given in oral argument on final hearing, by

CLYDE C. DAWSON,
Of Counsel for Colorado.

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SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1906.

No. 3, Original.

THE STATE OF KANSAS, COMPLAINANT,

vs.

THE STATE OF COLORADO ET AL., DEFENDANTS;
THE UNITED STATES OF AMERICA, INTERVENOR.

ORAL ARGUMENTS OF COUNSEL ON FINAL HEARING.

December 17th, 18th, 19th, and 20th, 1906.

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SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1906.

No. 3, Original.

THE STATE OF KANSAS, COMPLAINANT,

vs.

THE STATE OF COLORADO ET AL., DEFENDANTS;
THE UNITED STATES OF AMERICA, INTERVENOR.

INDEX.

		Page.
Argument of	S. S. Ashbaugh	1
	Nelson H. Loomis	35
	David C. Beaman	61
	A. C. Campbell	87
	Frank L. Campbell	121
	Nathan C. Miller	134
	Joel F. Vaile	160
	C. C. Coleman	196
	F. Dumont Smith	205
	Clyde C. Dawson	227

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ORAL ARGUMENT OF MR. S. S. ASHBAUGH, FOR COMPLAINANT.

Mr. S. S. ASHBAUGH: May it please the court: Near the east end of the tunnel that pierces the crest of the Rocky mountains, beneath Hagerman pass, on the Colorado Midland Railroad, they point out to you, on the south side, a dark spot on the mountain, and tell you that that is the source of the Arkansas river.

Mr. Justice WHITE: Are you referring to some map now?

Mr. ASHBAUGH: No, sir; just up on the mountain, away off in the distance. They say that is the source of the Arkansas river. That is at an elevation of about eleven thousand feet, or perhaps a little more.

Mr. Justice PECKHAM: Is that stated or shown on this map (referring to Defendant Colorado's Exhibit 3)?

Mr. ASHBAUGH: I think it could be found there. It is very near the crest of the mountain to the west, and a little

north of Leadville—just above Leadville. So that the Arkansas, with its affluents from California gulch and Tennessee pass, practically at Leadville becomes a substantial river. From there it flows through Lake Chaffee, and Fremont counties, and emerges from the mountains through the Royal gorge just above Cañon City. From there it flows through four counties in Colorado—Pueblo, Otero, Bent, and Prowers—and crosses the State line into Kansas at an elevation of about three thousand three hundred and seventy feet. It then flows east, then turns a little to the northeast, and then southeast, and south through thirteen counties in the State of Kansas, and flows into Oklahoma at an elevation of about one thousand feet. From that it flows through Oklahoma, Indian Territory, and the State of Arkansas, and empties into the Missouri river. The whole length of the river is about 1,410 miles. Of this about 357 miles are in the State of Colorado, and about 350 in the State of Kansas. We have taken these distances from a railroad map, and the river will wind a little, and so it may be somewhat longer, sometimes shorter, than these distances shown on the map. The drainage area of the river in Colorado is about 26,000 square miles, and the drainage area in the State of Kansas is about 20,000 square miles. I shall soon, however, and as sharply as I can, draw the distinction between the Arkansas valley in Kansas and the drainage area which extends to the crest of the divide on either side. But with that location of the river, about the year 1890—and by that word "about" I mean one or two years before or two years after—it began to be noticed throughout this 350 miles in Kansas that the river was going dry. The ordinary flow of the river during the dry season of the year, or the growing season—and I think we shall generally use the terms as interchangeable—began to decrease. The June rise, which figures very prominently in this case, coming from the melting snows in the mountains when the season has arrived to melt them, began either to be materially shortened or decreased in amount

until it came to be noticed that the whole flow of the river had disappeared and the June rise had gone. In the year 1893, one of the best posted men in the State of Kansas upon the history and settlement of the State, its geography, the location of its rivers, its natural development, having lived there 53 years, and a man of extended travel, presented to the Academy of Science at Topeka, at its annual session—and I may say in passing that that Academy of Science is a voluntary association made up of the best educated and most scientific men of the State of Kansas——

Mr. Justice BREWER: Who was that man?

Mr. ASHBAUGH: Mr. J. R. Mead. Mr. Mead presented a paper to the Academy of Science in 1893, upon the subject, "A Dying River," calling the attention of the State of Kansas to the fact that the Arkansas river was in process of disintegration. The Academy of Science meets in the month of January. These facts began to be noticed, began to be talked about. The bed of the river began to narrow and fill up. Islands began to form, and the sand bars began to be permanent in the river. They began to grow over with vegetation. Trees began to grow upon them, and all these things were noticed and talked about, until in the year 1898, a representative from one of the counties—that is, one of the lower counties that I referred to—came to Washington to lay the matter before the Attorney General of the United States. The Attorney General, Mr. Griggs at that time, informed the representative that the case of the United States *vs.* The Rio Grande Dam and Irrigation Company from New Mexico, had just been argued before this court, but had not been decided, and that when that case should be decided perhaps our condition in Kansas would be clearer, and that when the law was laid down by the court we might see our way, and proceed according to the law. The case was duly decided, and the legislature of the State of Kansas in the year 1901 authorized this suit to be brought. The Attorney General filed the bill in this court in May, 1901. In April,

1902, the demurrer that had been interposed by the State of Colorado was overruled by this court. The complainant, then thinking that it was necessary, asked and obtained leave to file an amended bill, making new parties defendant. Sixteen local corporations were made defendants, the first bill having been filed solely against the State of Colorado. Of these sixteen companies, two or three of them were not served, about a dozen of them answered, and some of them are here represented by their counsel, briefs have been filed, and oral arguments will be made. As the case was once argued in this court, and an opinion filed, and as our time is very limited, I shall state the issues very briefly.

The State of Kansas charges that the State of Colorado, through its statutory and constitutional officers, takes the water of the Arkansas river while it is in the State of Colorado and gives it, devotes it, to the individual irrigation companies in the State of Colorado, and that they apply that water to irrigating the arid lands of Colorado, and that they take it all—absolutely all—and that by doing so they have dried out the Arkansas valley down through the State of Kansas. That they have lowered the wells; that they have made our cellars that were originally damp in the spring time, dry; that the river has gone; that the sub-irrigation for maturing crops—which I shall also describe more at length—is gone for all practical purposes; that the condition of the river originally was such that navigation suitable to that kind of a river, at least from Wichita on down, was a practical result; that that has gone, and that the highest point of navigation today is at Fort Gibson, three hundred miles south of where it was thirty years ago.

That is the substance of our charge. Colorado does not deny that they take the water; they admit it. They plead it. Their witnesses swear to it—the strongest witnesses we have had upon that question. But they deny that it has injured us, hence an issue.

One of the defendants claims that the State of Colorado

has a right to control that water and a right to absorb it all, because it is one of the sovereign States of this Union and lying at the crest of the mountains. The Government, after the issues were framed, obtained leave of this court to intervene, and filed a petition of intervention. They deny—and I will leave that for them to discuss, but simply desire to give the court a sufficient idea so that it may apprehend our argument—they deny that the doctrine of riparian rights that we rely upon in Kansas extends over the other States. We do not claim it does. They deny the doctrine of State control. I simply state that sufficiently for them to take it up when they come to it. But they do put this in their petition of intervention—"that if the State of Colorado were allowed to assert an absolute dominion over and a sole ownership of the waters within that State, it would tend to destroy the navigable capacity of the Arkansas river and other interstate streams."

With this, proper replications were filed, and we came to the evidence. This court ordered that the evidence be taken. That occupied almost ten months' time. We began on the 15th day of August, 1904, with the Commissioner and all parties present, and concluded on the 16th day of June, 1905. Three hundred and fifty witnesses testified. Of these, one hundred and fifty were for Kansas and one hundred and fifty for Colorado and fifty for the Government—a convenient way to remember it. After the evidence was taken, which comprises 8,700 pages of closely typewritten matter, this court ordered that an abstract be made. An abstract was made by the attorneys for all three parties acting together, giving the actual language of each witness and the substance of all he said. It is printed, and is the official abstract in the case.

Chief Justice FULLER: This is the abstract here?

Mr. ASHBAUGH: Yes, sir.

Mr. Justice HARLAN: There is another abstract here.

Mr. ASHBAUGH: That is an abstract that was proposed to be filed by the Government, made by the attorneys for the Government, and now they have asked leave to file it as an appendix to their brief. We object to that abstract, and of course would have a right now, if they propose to file it as an appendix to their brief, to reply to it. Attorney General Coleman will file a very short objection to it. We do not think it is full enough nor perfectly fair. It is not satisfactory, at least, as to counsel for Kansas. We say that it does not present our case in the manner in which, as counsel for the State of Kansas, we believe we have a right to present it, and some very important matters are entirely omitted. I shall refer to one or two of them.

I wish now to call attention to the class of witnesses Kansas has introduced. We introduced one hundred and fifty witnesses. Over one hundred and thirty of these witnesses have lived on the river in the Arkansas valley for more than twenty or thirty, and some of them for more than fifty years. We took the most intelligent witnesses we could get, and the men that saw two things that I wish to impress upon the court—the men who were familiar with this river before the irrigation began in Colorado and were also familiar with it after that; because right there comes one of the main contentions in this case. We shall claim that of the witnesses they introduced twenty or thirty of them went across the plains forty years ago and saw that river but once, and are not competent witnesses to state what is now, because they have never seen it since. They were emigrants going west for gold, or soldiers crossing the plains in the early years.

Now let me call the court's attention to a fact that shows the character of the witnesses introduced on behalf of the State of Kansas. One of our witnesses, now living in the city of Hutchinson, has been on the river 56 years, with the exception of four years spent in the army—one of the most intelligent men in the State of Kansas; two of them have

lived on the river between fifty and fifty-five years; two of them have lived there between forty-five and fifty years; two of them between forty and forty-five years; eleven of them between thirty and thirty-five years, living right on the river in the valley, cultivating the land, driving over the country and seeing it day in and month out; thirty-seven of them have lived there between twenty-five and thirty years; nineteen of them between twenty and twenty-five years, and four of them for more than twenty years, making one hundred and twenty of our witnesses that have lived there from the time when the river used to run as nature made it down to the time when it has been changed by the acts of the State of Colorado and the irrigation in that State.

These witnesses that I speak of will become familiar, hence I wish to refer to a very few of them. I do not think the court need fear that two volumes of testimony is very formidable. I presume that by the time these arguments are over the leading witnesses will be so familiar that the court will understand that testimony.

Mr. A. B. Caldwell went onto that stream in 1850. He drove a team up and down the river for thirteen years, going into the army in 1862. He was a guide, a scout, driving a team from Ellinwood to Pueblo. Let me now locate a few of these towns. As you go down the river the first county seat in western Kansas is Syracuse, the county seat of Hamilton county; the next is Lakin, the county seat of Kearney county; the next is Garden City, and it is about seventy-five miles from the Colorado line, and is the county seat of Finney county; the fourth is Cimarron, in the fourth county east; then Dodge City, which is about four miles from old Fort Dodge, an old Government fort from the time the old Santa Fé trail was established in the early years. Ellinwood is just below Great Bend. Great Bend is at the northern bend of the river. That is the reason it is called Great Bend, or North Bend, as it was known in the early years. Ellinwood occupies this position: It is where the old

Santa Fé trail from Kansas City struck the river, and then it followed up the north side of the river to Pueblo. Ellinwood is at the junction of the old Santa Fé trail and the Arkansas river. There was another trail that divided from the old Santa Fé trail at Cimarron, and in this testimony it is often referred to as the Cimarron trail. That started off about thirty miles above or west of Dodge City and run to New Mexico, directly across the country, while the old trail went up the north side of the river to Pueblo and then south to Santa Fé. I may say in passing that that old trail was established almost a hundred years ago—perhaps, as near as we can tell, about the year 1810. We cannot locate the time exactly. It was not very prominent for about twenty years. But about the year 1825 or 1830 the old Santa Fé trail became the one permanent trail through the State of Kansas and the Territory of New Mexico to the city of Santa Fé. It was located there for one main reason—because they could always find water and food for their cattle and horses. By 1850 it was the great highway across that country. Near Pawnee Rock, near Larned, above Great Bend and below Dodge City, was the most dangerous place in all the West, on account of the Indians. It was fine hunting ground, and the Indians were always there, and that is where Mr. Caldwell began his experience, on that old Santa Fé trail, as a scout and guide. There was a Government fort at Fort Larned, just above the present town of Larned, and it was there to protect the immigrants crossing the plains over the old Santa Fé trail, and Mr. Caldwell was one of those scouts. Mr. Caldwell spent twelve years between Ellinwood and Pueblo. He is living today, a hale and hearty old man. We have his testimony in this case.

The next man I wish to call attention to came there in 1853 and established the old Government post near Ellinwood, or at what was known then as Fort Zarah, between Ellinwood and Great Bend, Mr. Mattheson, the real, genuine "Buffalo Bill," who was known as "Buffalo Bill" on the

plains for years before Mr. Cody was old enough to quit wearing knee pants. He is living in Wichita today. He has seen the river for fifty-three years.

Mr. Robert Wright, whom some members of this court may know, went up the river in 1859, and has been upon the river ever since and lives at Dodge City. He helped to lay out Dodge City in 1872. He traveled up and down the river from 1859 until he settled down as a farmer near Dodge City.

Mr. Mead came to Kansas in 1863. Mr. Mead made that address to the Academy of Science in 1893, and settled at the junction of the Arkansas and the Little Arkansas rivers, where Wichita now is, and was the Indian agent for all that country from the time he went there until the Indians disappeared, and he is living there today.

Mr. Justice HOLMES: Where is Wichita?

Mr. ASHBAUGH: Here (indicating on Exhibit No. 7). Here is Great Bend at the northern bend of the river. Ellinwood is here, just where the old Santa Fé trail, which is not shown upon this map, comes in from Kansas City and strikes the river and follows it, passing Larned here, Kinsley here, and striking then across the prairie near Fort Dodge, which is just below Dodge City; then Cimarron is here, Garden City here, here the city of Lakin, here Syracuse, and then on up to Pueblo. Here is somewhere near where I said they claimed the river starts, away up in the mountains.

Mr. Justice BREWER: Where is the Raton pass there?

Mr. ASHBAUGH: It is not shown on this map.

Mr. Justice BREWER: Near La Junta?

Mr. ASHBAUGH: Near Trinidad. Trinidad is not in the valley of the river, but is south in the southern portion of the drainage area. The drainage area of the river in Colorado does include Trinidad, but Trinidad is pretty well up toward the crest of the mountains.

Mr. Justice BREWER: Now, that Santa Fé trail after a while crosses at Trinidad?

Mr. ASHBAUGH: Yes, sir; at Pueblo and then to Trinidad.

This map is made for the purpose of locating the rivers and towns that are given on the river.

Mr. Justice WHITE: You said that Colorado admitted that she took the water, but denied that she injured you.

Mr. ASHBAUGH: Yes, sir.

Mr. Justice WHITE: Does that result from the fact that she claims that while using this water she returns it to the natural watershed?

Mr. ASHBAUGH: Yes, sir; that is one part of it.

With that class of witnesses we compiled this abstract, and then prepared our brief. We prepared our first brief, and Colorado prepared theirs, the Government theirs, and then we filed our reply brief. In these we have quoted quite extensively from the testimony contained in the original abstract of each witness, quoting such testimony as we think proves the particular point.

I wish to distinguish so that the court may see clearly the Arkansas valley from the drainage area. That is the first thing for us to get before this court. The Arkansas valley is composed of some level, flat land near the river, beginning just about the State line, not running into Colorado enough to mention it, being about a mile or two miles wide on each side of the river. It is sometimes wider on one side and sometimes on the other, widening out as it goes down until at Garden City it would average from three to seven miles wide. As you go on down the river it becomes wider. Right at Dodge City it is narrower. Above Dodge City it is wide, and below it is wide. Here at Larned it gets wider. It gets wider until it will average six or eight miles in width. In Reno county it gets about twenty-five miles wide, and then down at Wichita it begins to narrow until it is about seven miles wide at the city of Wichita. Now, that boundary is not made by high hills, but by what we call uplands. It is simply a gradual slope, but high enough so that it does not have the same characteristics as the bottom lands. That valley is spoken of by all of the witnesses and everybody

who lives there as bottom lands. Sometimes they call them first and second bottom lands. The first bottom lands are the lowest, with the second bottom a little higher; sometimes it is such a gradual grade that the one is not more than one or two feet above the other. The Arkansas valley has water under it anywhere from two to ten feet below the surface. Vary that a foot and you will not be out of the way. The Arkansas valley, as near as we can figure it, taking all of the testimony and averaging it, getting the width and the length, comprises about 2,500 square miles.

Mr. Justice BREWER: The valley is all sandy soil?

Mr. ASHBAUGH: Beneath, but on the top is the heaviest black mold in the State of Kansas, very similar to the black mold of Illinois or the valleys of Indiana, only not so sticky.

Mr. Justice BREWER: When you go on the upland you pass out of that?

Mr. ASHBAUGH: Yes, sir; you then find an entirely different condition. The Arkansas valley, when the trail was located there, and when the old settlers were there, did not have buffalo grass on it, but wild hay that would grow up, and that is the reason the old trail was located there, in order to have feed for the teams, but on the upland is the buffalo grass. The plains of Kansas were very thickly covered with buffalo grass in the early days, and the buffalo trails ran down through this valley to the river; but we speak and all the witnesses speak of the valley as this strip of land along the river that has its characteristics distinct from anything on the uplands. Now, that particular Arkansas valley is what has been injured by this action on the part of Colorado. We do not claim—although some would say that of course it has an injurious effect upon it, but we are not arguing such a thing before your Honors—that if there was more water in the river there would be more rains on the uplands. We think that is too indefinite. I think there is something of truth in it, but we cannot found any

substantial complaint upon that; but, if your Honors please, upon every square mile of that Arkansas valley there is an absolute injury to the State of Kansas or the citizens of the State. That is our complaint.

I wish now to call your Honors' attention to the next thing in that Arkansas valley, one of the most peculiar things to be found in the United States. I said there were 350 witnesses. The Government put on 50, many of them being the most intelligent witnesses in the United States, from the head of the Geological Survey down, and they described to us every irrigation valley in the country, and many of them described the Nile and the irrigation valleys of Europe. They gave us valuable testimony. But there is nothing exactly like this. I speak of the tributaries of the Arkansas river in Kansas. The tributaries of the river in Colorado flow into the river at an angle of nearly ninety degrees, or more than forty-five degrees. They come from up in the highlands or the mountains and flow directly toward the river. The tributaries in the Arkansas valley in Kansas are peculiar. They are unique. They all rise in the valley, flow almost parallel with the river, and are always lower than the river at a corresponding point. In other words, you go to the confluence of the Little Arkansas river, or the Ninnescah river, or the Rattlesnake river——

Mr. Justice WHITE: They all rise in this valley?

Mr. ASHBAUGH: Yes, sir.

Mr. Justice WHITE: In these low or meadow lands you speak of?

Mr. ASHBAUGH: Yes, sir; the bottom lands, as they call them. And the fall of those tributaries is less per mile than the corresponding fall of the Arkansas river. You go from the confluence of any one of those tributaries with the Arkansas five or ten or fifteen or twenty miles up one of those tributaries, and you do not reach as great an elevation as if you went up the big river the same number of miles. Now, that is at the foundation of our case. Let us take, for instance,

the Pawnee river. The testimony of the best witness we had, Mr. Northrop, at Dodge City, who has lived there for thirty years and carried the chain to survey the ditches we will refer to in a few minutes, shows that the Pawnee river is a perennial stream; that it gets higher at some times of the year than at others, regardless of rain; that it rises near the north side of the Arkansas river, and that those springs all along that feed the stream are all on the Arkansas river side, every one of them. None of them are on the other side. That river is so much lower than the Arkansas river that the town of Jettmore, the county seat of Hodgman county, is 216 feet lower than Dodge City, only six miles west of it. All of that is set out in the chapter in our first brief under elevations. The point to it is this: If you start at Larned and go up the Pawnee river to Jettmore, and start again at Larned and go up the Arkansas river the same number of miles, you will be fifty-six feet higher on the Arkansas river than you would be on the Pawnee. Now, this map here is not correct in all details. This stream here, the Rattlesnake, should come out here. It rises near the south bend of the river near Ford. As you follow the stream in some places you get 80 feet, as the testimony shows, below the Arkansas river at an equal number of miles above the confluence. The plainest one, now, is the next one, Cow creek. Cow creek flows into the Arkansas river seven miles below Hutchinson. The Little Arkansas river flows into the Arkansas river at Wichita. All this is given by the surveyors, and from incontestible proof, and all put into our chapter on elevations. The little town of Medora is, for instance, exactly the same distance on the Little Arkansas river that Hutchinson is on the Arkansas above the city of Wichita, and the two rivers flow together at the city of Wichita, but Medora is fifty-nine feet lower than the town of Hutchinson. In other words, I can state that so that the court can remember it, and within a very few inches of being correct. All of the tributaries have a fall of about one foot less per mile through the Arkansas valley than the

Arkansas river has. Now the river falls on an average about six feet to the mile. In the western portion of the State from about here up, it would fall about seven feet to the mile; from there down through the State it would fall about five feet to the mile. There is a little difference in it in some places, perhaps two or three inches, not more than that. There are no rapids and nothing of the kind. But when you come to these tributaries, they have this one characteristic. They rise in that valley, they are lower than the river, and the springs in every case are always on the Arkansas River side and never on the opposite side.

Mr. Justice WHITE: What do you mean by the Arkansas River side?

Mr. ASHBAUGH: Well, here is the Little Arkansas river flowing around there. We put Mr. Henry Hartford on the stand, who owns thirty-two hundred acres of land along both sides of the river, just across from Hutchinson. From him we learned that the Little Arkansas river was fifty-nine feet lower. He testified that in the thirty-five years he has lived there he positively knows that every spring that feeds the Little Arkansas river is on the south and west sides of that river. In other words, it is on the side next to the Arkansas, and every one of them testifies that that is because the big Arkansas river feeds those tributaries. It is the source of supply of every one of those tributaries in the Arkansas valley. Of course, if there comes a rain they will go up, but they will immediately run down again. But they go up and down just according to the amount of water there is in the big Arkansas river. I will come to that further along.

Mr. Justice BREWER: Is that true of all the streams?

Mr. ASHBAUGH: Every one of them, your Honor, in the Arkansas valley, excepting the Walnut.

Mr. Justice BREWER: Of Cow creek?

Mr. ASHBAUGH: It is absolutely true of Cow creek. The Walnut river is over in the Flint hills and is not in the Arkansas valley at all. The Walnut creek that comes in

at Great Bend is a stream from the divide. It is not in the valley at all, hence I did not mention that. We will leave out Walnut creek and also Walnut river. Here is Coon creek running right along the river. It takes twenty-five miles for it to get into the Arkansas. The reason is that it is below the bed of the Arkansas river at corresponding points. It runs right along the bed of the river. Then here is the Rattlesnake and then Cow creek, then the Cowskin on the west side, and the Little Arkansas river on the east side, and then the Ninnescah. One observation, there is a creek that is very distinct. The witnesses all call it the Kisseway creek. It rises about two miles east of Hutchinson and within a mile or two miles of the Arkansas river, running straight away from it. It does not enter the Arkansas river at all. It flows right through the valley and empties into the Little Arkansas river, and then the water runs down the Little Arkansas river and gets into the Arkansas river at the city of Wichita.

Now, with that we are prepared to come to the next question, which is that of the elevations. Where do we get this? From the elevations. We have set out the elevations on page 23 of our first brief, and if the court will pardon me, I will call attention to the page so as to show you that the elevations are all there—that is, I think they are very correct—just as correct as figures can give them. Counsel for Colorado, not knowing our conditions, were—honestly, I know; they were not otherwise than that—but were absolutely mistaken about our conditions, because they supposed our river flowed as rivers ordinarily do, at the bottom of the trough. It does not. They supposed that the drainage was toward the river, and that when they took the water out of the river they did not affect the land back of it. But the trouble with their contention is that the river flows on a "hog-back" the whole distance. It has built itself up, just as Professor Johnson testifies, until these tributaries

out there, two or three or four or five or ten miles, are lower than the river, and the water from the river percolates through the sand, that his Honor Justice Brewer spoke of, and supplies those tributaries; so that when they take the water from the river they take it all from the valley. There is the difficulty and where our great damage comes in. All that is shown by these elevations. When you come to take those elevations, and there is no dispute about them, Professor Carpenter testified to them, the State engineer of Colorado, then our damage follows, as a necessary result. When they take the water from the river, they take it from our tributaries. They take this that I spoke of, the sub-irrigation, and it drys out the whole valley. Now, with those elevations we can see what the water level is. There was a great deal of dispute and a great deal, and I say it with the utmost kindness toward them, a great deal of misunderstanding on the part of the Colorado witnesses when they came down into a different State and attempted to testify as to our conditions. Our witnesses all testify to this one fact, that the water level in this Arkansas valley throughout the 2,500 square miles in that valley, from here clear down, widening there and then narrowing here, always corresponds to the amount of water in the river. Every witness in Kansas, and there were nearly three hundred of them, testified to that.

Mr. Justice WHITE: Can you show that about your wells?

Mr. ASHBAURH: Oh, every one of them, your Honor, and the cellars. There is not a cellar in the city of Wichita—and witnesses by the score have testified to that—that does not correspond entirely with the river, regardless of rainfall. If the river stays up a week, our cellars are full; if it goes down for a week, our cellars are dry. Witness after witness, too many for me to mention, went over that fully, and in the early days when the emigrants went up the river all they had to do was to take a shovel and dig

down two or three or four or five feet, and they found plenty of water, but how far they dug depended upon the condition of the water in the river, absolutely. Everybody testifies to that. When Colorado came down and took the testimony of seventy witnesses all along that valley, they admitted it just as much as our witnesses. We had to stop somewhere. We might just as well have put a great many of theirs on, but, after we got one hundred and fifty, we thought it was time to stop. That water level depends upon the amount of water in the river. That water level is practically level with the water in the river, and when you get over into the valley of the tributary, then it begins to go down.

Mr. Justice WHITE: Will you not repeat that statement? I want to try and understand you. You said when you got over into the valley of the tributary the situation changes I don't know just what you mean by that.

Mr. ASHBAUGH: Suppose we start from Hutchinson here, and we go out at right angles from the river——

Mr. Justice WHITE: Going away, now, toward the uplands?

Mr. ASHBAUGH: Yes, sir; directly out toward the uplands.

Mr. Justice WHITE: Or what I would call the shore.

Mr. ASHBAUGH: For a number of miles, now—the evidence is uniform—that water level is practically level with the level of the water in the river. It rises and falls when the river goes up and down. When you get over into the valley of the Little Arkansas river, it is much lower; then it drains out.

Mr. Justice WHITE: I thought you said the valley of the Little Arkansas river is much lower than that of the Arkansas.

Mr. ASHBAUGH: Than the river bed of the Arkansas river at a corresponding point.

Mr. Justice WHITE: It is in the same valley?

Mr. ASHBAUGH: Oh, yes.

Mr. Justice WHITE: How can it get lower, then; if the Little Arkansas river is fed by the Arkansas river, and the rise and fall in one controls the other, although the land may be lower, the water in the Arkansas river being the same, how would your water get lower?

Mr. ASHBAUGH: Because it simply drains through the sands over there and drains down into that lower valley. And that is the reason why all the springs are on the side toward the Arkansas river. It drains down just the same as the river goes down, five or six feet to the mile. Now, that water level practically is always level with the water in the Arkansas river for quite a distance, a number of miles out, and then gets lower as you get into one of the lower valleys of these tributaries. That is the fact that all have testified to. I want to refer right now to one of the two great objections we have to Professor Carpenter's testimony. Professor Carpenter is a professor of irrigation and mathematics at Fort Collins, in Colorado. He testified that he had never known anything about the Arkansas valley until this case was up, until about three years ago, when he came down there. He did not know of those elevations and these conditions, and he assumed that the water level rose as you went back from the river, as he called it, and he went on and testified to that. He began here, about in there—this doesn't show it. One of the towns is in Sedgwick county here, and the other just across the line, in Reno county. He ran two lines of levels. He ran them due north, and then measured the water level. He found the water level, as he went due north, getting higher, and he drew his whole conclusion from that, when the fact is, as your Honors can see, that instead of going away from the river at right angles he was going up the river. Now, we put the surveyor on the stand, the surveyor of Sedgwick county, and we have in our exhibits

numbers 62 and 63—they are in the record—these blue prints, that show that his measurements are correct. But he did not run straight across on a line that struck the course of the river at right angles. He started from the bridge here, at a place where he says the river runs south of southeast, and he went north. Of course, if you go up the river the water level will get higher; but he did not go away from the river at right angles. These blue prints show that when you go away from the river at right angles it is practically on a level. This is in the record. So that his first great mistake was that he did not understand the conditions. I am not blaming him; he simply had never been down there and he didn't know the conditions.

Mr. Justice McKENNA: You have indicated on the map where he went at right angles from the river, and yet you say he did not go at right angles from the river, but up the river.

Mr. ASHBAUGH: You will find in the testimony that he started from the bridge at Mount Hope. That is just across the line, in Reno county. And also from the bridge at Colwich, which is just near the west line of Sedgwick county. Now, he measured due north, right on a section line from each of these bridges; hence, from the point down there——

Mr. Justice WHITE: You are turning your pencil to the map and pointing "down there" and it carries the mind right away from where you are going.

Mr. ASHBAUGH: You start from the bridge at Colwich there, and I said the river ran south of southeast. If the court will now look at this reduced abstract which the Government has filed, in the back portion of it, you will find an exact duplicate of this map.

Mr. Justice WHITE: Is this the map?

Mr. ASHBAUGH: Yes, sir; that is a duplicate of the map on

the board here. Now, this Colwich is just about half way between Wichita, in Sedgwick county, and Hutchinson, in Reno county. Just about half way. It does not show on the map.

Mr. Justice WHITE: Wichita is on this map?

Mr. ASHBAUGH: Yes, sir; now just go about half way up to Hutchinson, and that is where these lines were made. Now, the river at the points where he started his measurements from a bridge across the river flows south of southeast. He made his measurements due north. He found that the water level rose as he went away from that bridge, and he assumed that that showed that the water level was higher when he got back from the river, and so testified. On cross-examination he admitted that he went due north. We put this surveyor on the stand who made that map and he found his measurements correct. But the surveyor runs from each of the wells due north from the bridge across to the river, striking the river at right angles to the general course of the river, and he finds the water level practically on a level with the water in the river in every instance. So Professor Carpenter was mistaken when he said that the water level rose as he went back from the river, because he was going up the river. "Back" ought to mean away from the river at right angles. And if he had done that the water level would have been the same, under all this land, as it is in the river, until you get over into the valley of the Little Arkansas river, and then it is lower.

Now, with that I come to the main question in the case. Was there ever an Arkansas rivere before Colorado took the water? That is the question. There isn't any there now, and they don't claim there is. During the last two years there has been water, because the last two years were the two wettest years ever known in Kansas.

Mr. Justice WHITE: Do you mean in the bed of the river or in this river that you suppose to be flowing outside through the valley?

Mr. ASHBAUGH: Literally, both of them, because when you take it out of the bed of the river in a few days or a few weeks it dries out clear to the uplands. Dean Stanley said of the Nile that "it is sacred, beneficent, solitary, the very life of the State and the source of all fertility in the land." I can repeat those words as literally true of the Arkansas river and the whole southwest quarter of the State of Kansas. It is the life of that country. Now, was there ever a river there? They have introduced a map—I got it today for the first time—in which they mark the river for about 150 miles here by a dotted line. I reply once and for all that that was not a dotted line before they took the water in Colorado for irrigation purposes. They got that idea from a picture that was made by Professor Johnson, an elegant scholar, introduced by the intervenor. He came to that valley in the west end of the State of Kansas and in Colorado in 1896. He never had seen it in his life until then. And he found the river dry. He made it a dotted line. Eight years, as I shall show you, after they diverted the water he found it dry. They have made a dotted river of it. Now, how did it flow? I wish to call your Honors' attention to page 48 of our first brief. At the bottom of that page you will find the width of the river stated in two columns. The first column shows the width of the river as established by the Government surveys. We have had two Government surveys, the lower half in 1867 and the upper half in 1872. Those first lines are from their surveys, and to remember it easily, it will average 1,200 feet wide; at Wichita about 1,000.

Mr. Justice WHITE: That is the bed of the river?

Mr. ASHBAUGH: That is the bed of the river between the banks. Those banks are about two or three or four or five feet high. The drainage runs away from them, from the banks, and the consensus of all the testimony was that that river used to flow—not taking it during times of freshets—about two or three feet at the low-water flow. That is the kind of river we had. So many people get a wrong idea of

that kind of a river who are accustomed to the rivers in the east that are deep and perhaps narrow. Ours are wide but shallow, a long, shallow river, and it will average about two or two and a half feet, or, as some of the witnesses said, when it was safe to ford it, as Mr. Caldwell said, who had had more experience than any other living man on it, old "Buffalo Bill," "when it was safe to cross it about axle deep." Some of them said about saddle deep to the horses, etc. Then a freshet would come and make it two or three feet higher. Now, did it ever go dry? Yes. In 1859 and 1860 there was what is known as the trans-Mississippi drought. There was not a drop of rain fell in all that country for sixteen months, and the river went dry. They say it never did have any water in it. That is their defense. If there was no water in it I should like to know how they have put two hundred thousand acres of land under irrigation in the wasteful way in which they irrigate in Colorado. It did flow; that is the testimony of the witnesses. It was there and it maintained its bed twelve hundred feet wide.

Mr. Justice HARLAN: How deep was it when it was that wide?

Mr. ASHBAUGH: According to the consensus of the testimony the average would not be very far from two feet. Perhaps a little deeper. Take the testimony of Mr. Caldwell and one or two others up the river there and they would put it about girth deep to a horse. In freshet times, though, they did not pretend to cross it.

I want now to call attention to Exhibit No. 1 in our first brief. That is a picture of the old river bridge at Wichita, taken in 1878, and shows the river at its low normal summer flow. The best evidence we have as to the correctness of that picture is the first Government engineer who ever went out and surveyed the river, Mr. McKown. He testifies that he saw the river in January, 1879, and that picture shows the river 800 feet wide. That bridge was built in 1872——

Mr. Justice WHITE: Is this picture you have here below or above the point where they have the dotted line?

Mr. ASHBAUGH: It is below, perhaps a hundred miles. Mr. McKown was a Government engineer sent out by the Government to determine whether it was worth while making appropriations for navigation. He went out there in January, 1879. He reported that river, as he found it there, was at its worst stage because the water was low. He then says: "You will see that from the lower chord of the bridge down to the water it is about ten feet." So that picture is a very fair representation of the summer flow. The next picture is from the same place but a different bridge. The old wooden bridge at Wichita is the first bridge ever built across the Arkansas river. It was built in 1872. It was hauled from Emporia; that was the end of the railroad at that time; and in order to get the cost as low as possible they built the bridge as short as they possibly could. They built it eight spans in length, of 100 feet each. It was just as short as they could possibly make it. That bridge lasted until 1879, and the next picture shows the new bridge. That is the iron bridge. That is there today, what is left of it, and that shows the condition of the river from 1879 to 1889. The third picture shows the condition of the river after Colorado had gotten in its work. They began to take a span off. The people there found that the river had narrowed and the bridge was altogether too long, and they took off a hundred feet from the west end of it. Then when Colorado completed its work and dried out all the valley, they took off 200 feet off the east end, and that is shown in the fourth picture. That bridge today is 500 feet long, and the river is not over 200 feet wide at the city of Wichita. Mr. Hughes, an attorney in the Attorney General's office, went out and photographed that whole river this last summer. I hope he will introduce his photographs, although they were all taken after the evidence closed. But they may introduce them in the argument to be shown to the court with our full consent and approval. He went and made his own photographs. Now, as to the width of that river, it flowed on an average of a thousand feet wide. It

flowed two or three feet deep and was deep enough so that at Wichita Mr. McKown, the Government engineer, testified that it was a navigable river from Wichita down, and the Government of the United States appropriated $94,000 in 1879, 1880, 1881 and 1882, and it was expended in improving the river and in keeping it navigable.

Now, when we had water in the river as it was accustomed to flow, we had plenty for our lands. The witnesses all spoke of the Arkansas valley as the "Egypt" for all that country. In the early years they could raise corn in the Arkansas valley, whether there was rain or not. They got their supply from the underflow, from the sub-irrigation of that valley. When that river ran as it used to run, they had water for the water power at Arkansas City. There is a canal built for water power, and they got a thousand-horse power. They used five hundred of it. They used it until Colorado took the water from the river, and it went down, and the mills moved away from that canal. There was plenty water then. In 1879, there was so much water in the river that "Buffalo" Jones, the only witness we did not get—he was in Montana and we did not get his testimony—"Buffalo" Jones began digging irrigation ditches along the river in the valley at Garden City. During the next three years Garden City built up, as Professor Johnson says, upon those irrigation ditches. They dug over four hundred miles of ditches in this valley, and had plenty of water for all that irrigation. Just about that time Colorado saw the development across the line and began digging their ditches in 1885, 1886, 1887, and 1888, and from that time on the water was taken and our ditches went dry, until Professor Johnson says it is "the finest display of dry ditches in all the arid lands." The canal at Arkansas City went dry. Our valley dried out and we no longer have our "Egypt."

An adjournment was then taken until December 18, 1906, at 12 m.

DECEMBER 18, 1906—12 m.

Mr. ASHBAUGH (continuing): May it please the court, on account of our limited time, it has been agreed between counsel for complainant that I have yet twenty minutes' time.

The poet has said that "streams their channels deeper wear." This may be true in Scotland or in the eastern part of the United States, but is not true of the Arkansas river through Kansas any more than it is true of the lower part of the Mississippi. It is a well-known fact, which is referred to in the evidence, that the lower part of the Mississippi river has built itself up, and that has also been done, as I explained yesterday, throughout the Arkansas valley, in the State of Kansas. Professor Willard D. Johnson, a witness for the Government, whose evidence was taken in this city, was certainly one of the most learned men who appeared for the intervenor. On page 73 of our reply brief we quote a sentence from his "High Plains and Their Utilization," which seems to be his great work. He went west in 1896 and spent some years in preparing that work. He says on page 73 of our reply brief: "There is a single local exception to this rule of stream depletion." Of course, he might have included, I think, the lower part of the Mississippi, but he is speaking of the Arkansas river. He says: "The Arkansas river, along most of its course across the high plains, has changed its habit from degradation back again to building. There are topographic evidences of this effect for fifty miles eastward from Dodge." Of course, he refers to Dodge City there. The only unfortunate thing for us about Professor Johnson's testimony was that he was studying the high plains, and he did not continue his investigations down the river through the Arkansas valley. So that he says there is evidence of this even for fifty miles beyond Dodge. If he had only had the opportunity to go down the river through the valley to

Arkansas City, he would have found indisputable evidence every mile of the way, and the evidence increasing in its conclusiveness. For instance, at the city of Wichita the river runs nearly due south; practically as it crosses the main street, which runs due east through the city of Wichita, the river runs at right angles. It is not shown exactly correctly on the map there (Exhibit No. 7). The Missouri Pacific depot, in the city of Wichita, is on the east bank of the river, not more than one hundred feet from the river. The Rock Island depot is nine blocks due east of the Missouri-Pacific depot, and away from the river, and yet the Rock Island depot is five feet lower than the Missouri-Pacific depot. The whole drainage of the city of Wichita runs east, away from the river. That is all in proof over and over again. It runs into Chisholm creek out here a mile and a half each, which, at the city of Wichita, as it crosses the main street in the city of Wichita, according to the testimony, is from eight to ten feet lower than the river bed on the same street, and that little creek runs seven miles down before it can get into the Arkansas river. Professor Johnson had the right idea, and he is correct, but, unfortunately for us, he did not have time to extend his observations down the valley of the river. So that the fact is that that river, from about Garden City, runs, as I said yesterday, on a "hog-back." It has made it itself. And then the tributaries—I called them tributaries yesterday—in one sense they are not tributaries but are leeches or ditches or suckers from the river, and get their supply from the river. They run out, as these show, down through here, and then down into the river below. That leads, if the court please, to the most important fact in this whole case. Of course, it was a matter of amusement to counsel on the other side for many weeks in the testimony at first to have us refer to the underflow. But the amusement has gone. That underflow exists under all this land, which drains

away from the river. The top of the land, as I said yesterday, is a black mold. Beneath that there is a coarse sand through which the water courses. That water all has a motion, a current, and that current is almost invariably in the same direction as the river, and that underflow is what feeds our whole valley. That underflow runs into all of these streams, and, as I said yesterday, is on the Arkansas River side, and makes those springs. That underflow appears in every cellar from Syracuse to Arkansas City, when the river is high, for two or three weeks at a time. Of course, if the river comes up and goes down in twenty-four hours, it would not affect it back to any great distance; but if it comes up as the June rises used to come, then every cellar in the valley is affected. The fact is that the witnesses testified over and over again that in the early years no deep cellars were ever dug in Wichita. Today we are digging cellars five feet deeper than they did twenty-five years ago. That underflow has a current, as testified to by Professor Slichter, one of the most expert witnesses that went upon the stand. And again, the only objection we have to Professor Slichter's testimony is that he did not continue his observations down the river. He was not our witness and we had no control over him. He was a witness for the Government. He went out here to Garden City and made his main explorations and examinations near Garden City. Here is one convincing fact. A flood came down the river from above. While he had his two or three hundred wells and all of his delicate apparatus to notice the rise of the underflow and the level of the underflow, and, by some very ingenious methods of his own, was detecting the direction of it and the rate of velocity, that flood came down. It lasted more than fifty hours. Professor Slichter says it changed the direction of the current of the underflow forty-three degrees. It spread it out from the river, as he said, putting his hands out like that (in-

dicating). He said that by raising the water in the river it ran out through the soil; hence the river throughout its whole course is not only a standpipe indicating the height of the water, but it indicates the height and amount and supply of the underflow. So that when Colorado steps across the state line—and those red lines represent their ditches—and takes the flow from the Arkansas river, they take not only the flow of the river through Kansas, but they take the underflow; and, to remember that easily, two hundred witnesses, and even more, testified that the underflow in the last fifteen years has been from three to five feet lower than in the earlier years. That was the source of the marvelous fertility in the Arkansas valley. Now, what have they done? The cause of the change I spoke of about 1890 is shown on page 123 of our first brief. On that page you will see the amount of water they have appropriated and diverted in each year. That is gotten, as the testimony shows, from page 125, where the amount decreed to each one of these corporations—sixteen of which we have made defendants—is shown. I may state to the court that we simply took all those who had diverted above fifty cubic feet per second of time. If they had diverted less than that we did not make them parties defendant. Now comes the overwhelming fact. I have stated that about 1890 this change began to be shown. No water was diverted in Colorado in great amount until these big corporation ditches began a successful career. We did not mind what they had taken before that. We did not care. We are not particular as to that. We made no complaint until they robbed us of the whole. In 1884, they appropriated 450 cubic feet per second of time.

When we speak of cubic feet, unless there is some other definition given, we always mean a cubic foot per second of time.

Now, you take the years 1887, 1888, 1889, and 1890 and

1891, and they appropriated 3,447 cubic feet per second of time. That was in five years. Immediately after that our river went dry. There is not that much water in the river at one time during the dry season of the year, hence each ditch takes it entirely, according to prior appropriation, and if the first one up near Pueblo needs it all and is prior in time it gets it all. That is the evidence of Mr. Chew, the division engineer of Colorado, who has control of all the water in the Arkansas river in the State of Colorado. So that in those five years they appropriated five times the normal flow of the river at the dry season. Now, what is that normal flow? I think the court has a right to know. On page 125 of our first brief we quote from the bulletin of the Government prepared by Mr. Greene, which shows that the normal flow of the river for the six wet months is 2,030 cubic feet per second of time; that for the six dry months it is 700 cubic feet. Now, I can state our claim in this case in one word—in one sentence: Colorado takes all the water during the dry and growing season of the year and leaves us none, and they do not take water for irrigation to any extent when there is plenty of it. When Mr. Hughes photographed the river last summer he saw that indentical condition. It is in the testimony that when there is plenty they do not open the headgates and take a supply—and it is more inconvenient and perhaps a little more expensive for them to take it then, and hence they wait until the river flows a thousand or five hundred cubic feet and then the oldest ditch takes it all. That is the testimony of their witnesses. There is the great complaint. And the result of that has been this—they have dried up the normal flow of the river during the growing season of the year. That has lowered the underflow. We have shown that the underflow is connected with it and goes down with it in the depletion of the river.

I wish to call your Honors' attention to the pictures that are shown in evidence. Exhibit No. 45 in our first brief is

a photograph that was not taken for this case; we found it at Garden City. It was taken in April, 1904. There was not a drop of water in the river at Garden City at that time—not one drop. A dozen witnesses, upon calling their attention to that picture, said that that was the exact condition of the river from the 25th day of July of the year before. Not one drop in that river at Garden City from July 25, 1903, until the 3d day of May, 1904, when Professor Carpenter testified that a flood came down the river from an excessive rain in Colorado. And I may say once and for all that during the summer of 1904, many heavy rains occurred in Colorado. Everybody knows of the Eden wreck. Everybody read about Trinidad being washed out. Those floods came down the Arkansas river.

With that I want to call your Honors' attention to the next picture, Exhibit 41. There is a picture of the bridge at Wichita running east and west on Douglas Avenue across the river as it stands today. The bridge is only 500 feet long—300 feet shorter than it was when it was built—and beneath that bridge two-thirds of the whole carrying capacity of the river is filled with an island. Ackerman's island appears in this case from the beginning to the end. Ackerman's island lies right in the middle of the river, in the city of Wichita. The lower end of it has grown until it extends clear under the bridge forty feet, and trees are growing today, according to the testimony of the witnesses, below the bridge. That island has sixty acres in it now, with cottonwood trees fifteen inches in diameter growing upon it. They grow very fast there. That island was not seen when the first three pictures which we present, Exhibits 1, 2, and 3, were taken in this case.

Mr. Justice BREWER: What years were those?

Mr. ASHBAUGH: The last one was 1889, when Exhibit 3 was taken. There is no Ackerman's island shown there. It is not there. In that picture there is no Ackerman's island shown. About that time the sand bars began to grow

very fast and some of them will grow a foot in a year. Exhibits 60 and 61 show what has been done.

Now, has it been an injury to us? Let us see. Two hundred witnesses testified that of our crops throughout the whole valley, our corn has been reduced one-third, alfalfa one-third to one-half, and all other vegetation in a similar proportion. Professor Carpenter right here made his second great mistake in his testimony as to Kansas. He testified that there was also a falling off of fertility in the bottom lands along the Smoky Hill, the Saline and the Solomon rivers, three other rivers in the north part of the State which rise in the northwest and flow east into the Kansas river. That was disproved absolutely and conclusively by Mr. Coburn, the secretary of the Board of Agriculture of the State, whom everybody knows, and witnesses who have lived on those streams for more than fifty years deny it positively, and say that the valleys of the Saline and Smoky Hill and Solomon rivers, acre for acre, are as fertile today as ever. It is literally true that the only loss in crops in the State of Kansas is in the Arkansas valley, by reason of this loss of water. How much is that loss? Let me give one set of figures. Twenty-five hundred square miles of territory amount to about one million six hundred thousand acres. If one-half of that has been in crops lately—and that would be a very low estimate—much more than half of that is in crops year in and year out—and the value were only $10 per acre, it would be worth eight million dollars a year. If that is two-thirds—and that is a high estimate of what all the farmers give it—we have lost four million dollars a year for fifteen years. In the early years they began building the Garden City ditches. They are purely riparian ditches in the valley; they were all dug before the Colorado ditches. The lower part of our valley here was settled in 1868, 1869, 1870, and 1871. We introduced Exhibit No. 5, which is a record of three hundred quarter sections of land abutting on the river from Arkansas City to Hutchinson, every one of them pat-

ented by the Government of the United States before Colorado was admitted in the Union. Our right is prior; we settled that valley first. We dug our irrigation ditches, riparian in their method in 1879, and had them completed by 1883, and they were prosperous and in fine condition for five years. Colorado looked on from across the State line. These State officers took this water, gave it to those large irrigation ditches, some twenty of them, we have named them all there, and they take it absolutely all. So in answering a question that was put in the opinion of this court when the demurrer was overruled, Is there a danger or tendency of Colorado taking it all? I answer that there are no less than six ditches in Colorado that can take the whole normal flow of the river at the dry season, when we need it most, and each one does take it in its order.

Mr. Justice WHITE: I suppose in performing your duty in the case, you are discussing the facts only, not the law?

Mr. ASHBAUGH: That was the arrangment, yes, sir; I am not to discuss the law at all.

Now in reference to the seepage. Their witnesses testify and the witness for the Government also, that these ditches are so arranged that each one takes the whole flow of the river at the dry season and also the seepage, so that Kansas gets no seepage except from the very lowest ditch down here, the Buffalo ditch, about five to seven miles long. I call the special attention of the court to the testimony of Mr. Cressy, water commissioner at Rocky Ford, who testifies that each ditch in its turn does do that, and gives the reason, which is that the water runs into arroyos and back into the river, and the next ditch takes it all. We have given the locations of these headgates. I have only time to call the attention of the court to them. We have carefully selected pictures that were taken of these headgates, and these exhibits show that they take the whole of the water. (Referring to Exhibits 42, 43, and 44.) That ditch was taking every drop of the water when those pictures were taken. It is sixty-six feet wide and

four feet deep on that day, but the water was not going down the river; it was going into the Fort Lyon canal.

One word as to the remedy: You may ask what I think should be done. I answer it under the law and the equity of the case. I think that as Kansas is prior in everyone of her rights, that we are entitled to the normal flow of that river in the dry season of the year—to the 700 cubic feet per second. They may have every drop of the water above that amount and impound it, and instead of drying up a single ditch in Colorado, that will increase it, because there is more water above the 700 feet than there is below that line. They ought to allow that 700 feet of water to come into Kansas, and that will supply us. We can get along with that. Let them when there is 2,000 feet in the river take thirteen hundred feet and there will be no complaint from Kansas. When we were there the last time 8,000 cubic feet of water were running to waste, and their ditches were closed. Then what occurs? Floods below. We are troubled today in Kansas ten times as much by floods as we were twenty years ago. Why? The river is not one-half as wide. A man living at Colwich testified that at his farm it had narrowed 627 feet in fifteen years and 287 feet in the last five years. The river banks are not over half or two-thirds as wide as they were. The bed has filled up, and there are islands in that river from one end of it to the other. We photographed them and put them in the record. One of the witnesses, living at Great Bend, a Russian, may not have seen the humor in it when he said that he called the islands in the river bed, which he had been pasturing, his Philippine possessions. There were so many islands. But he told a literal truth. Hence, when a flood from a rain comes down our country is flooded; not because there is more rain; oh, no, your Honors, there is not. The rainfall at Dodge City does not vary in the last sixteen years more than .06 of an inch from the sixteen years before that. I mention sixteen years because the records have been kept for thirty-two years.

There is no practical variation; so that this river has not been dried up from lack of rainfall. Its carrying capacity is gone. We are flooded when there is high water. The testimony in this case is that it would require many days for a flood to get past Wichita, for it cannot now run off, when every drop of that water thirty years ago would have gone under that bridge without any trouble. That is the condition in which they have left us. We might have applied to the War Department and said that a navigable river was being affected in this way, but in our conference with the Attorney General of the United States, he said, "Bring your action, the Government will intervene, and this matter can be disposed of."

I thank the court for its attention.

ORAL ARGUMENT OF MR. NELSON H. LOOMIS, FOR COMPLAINANT.

Mr. LOOMIS: May it please the court, I shall follow for the State of Kansas, and intend to occupy only three-quarters of an hour. I shall devote as much of that time as I can to a discussion of the law, but I imagine the questions of fact in this case are really more important than the questions of law, and I am anxious to call the attention of the court to certain questions of fact, drawing my conclusions from and basing my arguments almost entirely upon the testimony of the witnesses produced by the State of Colorado or by the United States.

The grievance of Kansas against Colorado is that Colorado in the first place claims the right to take all of the water out of the Arkansas river to satisfy its necessities; and we complain not only because they claim this right, but because in pursuance of that claim during the irrigating season they actually do take all of the waters of the Arkansas river which it is physically possible to impound and use.

Now, with respect to their claims, I shall call the attention of the court to a short colloquy which occurred between some of the members of this court and counsel for Colorado upon the argument of the demurrer. The question arose in the first place upon an interrogatory propounded by Mr. Justice White in comparing the Arkansas river and conditions in Colorado and Kansas to conditions which might arise in Massachusetts and Connecticut with respect to the Connecticut river. That was followed up by questions propounded by other members of the court, and then this question was asked by Mr. Justice Brewer:

> "Mr. Justice BREWER: Do I understand you to claim that the State has a right to appropriate all the waters that flow through it and run into another State so that none shall go into that State?

"Mr. GODDARD: Yes, I understand under the doctrine of the Rio Grande case that the State has a right to provide what use may be made of its waters. It may repeal the common law riparian doctrine and it may use it for appropriation.

"Mr. Justice BREWER: Can the State, either by itself or by authorizing its corporations or its citizens, appropriate all the running water of a stream so that none goes into the adjoining State? Is that your contention.

"Mr. GODDARD: Yes sir; that is my claim. Although this is itself an absolute physical impossibility. It cannot be done. But I say they can use the waters for appropriation and irrigation, and they will then go back and percolate through the soil and return to the stream in the underflow.

"Mr. Justice BROWN: I do not quite see yet why the State of Colorado may not, by building irrigation ditches and reservoirs or authorizing them to be built, impound the entire waters of that river before they reach the State of Kansas. They might do that, might they not?

"Mr. GODDARD: Yes, they might.

"Mr. Justice BROWN: Do you claim that is competent?

"Mr. GODDARD: I insist, as I understand the doctrine of this court, that that can be done."

The same assertions are made, practically, in a number of places in the brief of counsel for Colorado upon the merits of the case. And in an allegation in the answer the claim is made that the State of Colorado has plenary authority over the waters of the Arkansas river and other natural water courses in the State of Colorado.

This then being their claim, that is to say, claiming the right, having the need for the water and having the power to take the water on account of their location, what are the human probabilities as to what they will do? The probabilities are, under these circumstances, needing the water, claiming the right to take all the water and being in a place where they can take the water, that they will actually take the

water. And that, if the court pleases, is what we claim the State of Colorado actually does during the growing or irrigating season of the year.

Mr. Justice HARLAN: What is the irrigating season—when does it commence and when does it end?

Mr. LOOMIS: I was just going to call attention to the testimony of the superintendent of irrigation of the State of Colorado, where he testifies that it is during May, June, July, and August; that seventy-five per cent. of the irrigating is done during those months. In referring to the evidence upon this proposition I shall not go to the testimony of the witnesses from Kansas, who have given testimony as to the depletion of the river and the effect of the use of water upon the river in the State of Kansas, but I shall call your Honor's attention to the testimony of the official representative of the State of Colorado, the man who had charge of the distribution of this water, the superintendent in charge of irrigation for the State of Colorado in this particular irrigation district. The gentleman's name is Chew. We proved by Mr. Chew in the first place the amount of the decreed appropriations, the extent to which the courts of Colorado had gone in authorizing the use of the water from this river for irrigation purposes. His testimony was that it amounted to 10,240.56 cubic feet of water per second of time. Now, according to the testimony of the State engineer, Mr. Carpenter—I believe his figures are low—but his testimony is that at the point where the river leaves the mountains, at Cañon City, the normal flow is 750 cubic feet per second of time. That flow is increased somewhat by tributaries which run into the river east of the mountains. But conceding that his figures are low, it is still proved that the decreed appropriations, the amount of water which may be used, according to the decisions of the courts of Colorado, exceed many times the actual amount of water flowing in the river, and it shows to what extent disputes may arise in regard to the use of this

water when it is needed for irrigation purposes and the water in the river is low.

Now, Mr. Chew goes into that question fully. He gives the acreage that is irrigated, and gives it approximately at 400,000 acres. I think it would have been more accurate if he had said 350,000 acres. He states that seventy-five per cent. of the irrigating is done during the months of May, June, July, and August; that at the time the crops are irrigated the temperature is often as high as 100 degrees in the shade. He testifies that some of these irrigating ditches are from fifty to seventy-five miles long; that the water in many instances is carried as far as twenty miles away from the river in a direct line. Then he goes on to testify in regard to his duties during the irrigation season, the disputes which arise, the trouble which he has in settling these disputes, the anxiety with which he distributes the water, and his efforts to get every drop of water which he can possibly secure.

Now, I wish to read an excerpt from his testimony which I have written here, and I will not refer to the official abstract. If I undertook to do that in each case and call your Honors' attention to it, I could not possibly get through with the remarks which I have to make this morning:

> "During the past few years these ditches referred to have not been getting as much water as they wanted. There is great difficulty in distributing the water, because the water is not in the river to give them, and when there is no water in the river everybody wants what there is and we cannot let them have it. * * * During the last eight years there have been some portions of the year that they were not getting the full amount of their decreed appropriations and the amount they desired. This has frequently occurred at some time during the year. One year it went for a whole season pretty nearly. It went for three or four months at a time and sometimes for thirty or sixty or ninety days. * * * I don't think there has been more than two really good years in the last eight years when we had plenty of water.

> There are times always when some of the ditches are not getting any water."

And then he goes on to make this statement on page 516:

> "In order to get them all I could I took all the water from the river that I could possibly get and I didn't allow a bit of it to get away if I could help it. We had special orders not to allow any to go down the channel into Kansas. These special orders originated with me."

This is the testimony of the official representative in charge of this river for the State of Colorado.

Now, on page 517—and I wish to turn to the record on this—he testifies how in the use of the water it is all taken into a ditch—we have some photographs in our brief illustrating it. All of the visible supply of water in the river is turned, by means of a dam, into an irrigating ditch. A little water seeps underneath the dam and the picture in our brief shows very nicely how at Fort Lyon it is all turned into the ditch and that but little seepage water gets below the dam. The water taken up by the ditch is spread over a vast amount of territory, and some of it seeps back. But the seepage water is gathered up by a ditch lower down. Some more seepage water comes back from that ditch, and that is captured by another ditch and Mr. Chew explains in regard to the capture and recapture of seepage water on page 517 of the abstract, as follows:

> "In speaking of the water being captured again after returning to the river as seepage, I meant to say if the appropriation nearest to the water was entitled to it it would get it. The water that would gather in the river below the dam I don't think some of it would ever get to any dam whatever below; it would be taken into a small ditch. It would go down until it struck some other ditch and it would then be captured by that ditch, if it was entitled to it. If a dam should take all the visible water above it and put it into a ditch some of it would get back again and some of it

> would go under the dam, but the next dam or ditch would catch it if it appeared, if there was any of it in sight. Then if any happened to go by again from that ditch or dam and went down the river aways another dam or ditch would capture it again if it appeared, if there was any of it in sight, and that would be kept up from one end of the river to the other, until the Kansas line was reached, and then Kansas would get it. There is some left and Kansas gets it."

According to the irrigation experts put upon the stand by the United States, it appears that of this water used in irrigation two-thirds of it evaporates or goes into plant life and is absolutely lost to the river. It cannot possibly seep back. And upon this proposition I wish to quote very briefly from the testimony of Mr. Elwood Mead, an employé of the Government in irrigation matters. His testimony is found on page 1390:

> "As to the general proposition and as to what proportion of the water that is diverted for irrigation is evaporated and absorbed by plant life, I will say, taking the large number of measurements we have made and those we have collected, about two-thirds of it."

Mr. Clarence Johnson, State Engineer of Wyoming, testified to the same effect. Even Mr. Carpenter, the State Engineer for Colorado and the principal witness for that State, testified this way in regard to it: "From one-half to two-thirds of the amount of water used in irrigation evaporates and goes into plant life."

Now, if your Honors please, in view of this testimony, the fact that this water is carried sometimes twenty miles from the river and is used in ditches fifty and seventy-five miles long; that it is spread over a territory aggregating 350,000 acres; that it is used time and again; that it is applied to the soil during the hot summer months when the temperature is as high as 100 degrees in the shade, is it necessary to appeal to any witnesses from Kansas to

show that this immense use of water in Colorado necessarily depletes the flow of water in the river in the State of Kansas? And is it necessary for us to go beyond the testimony of Mr. Chew, the official representative of the State of Colorado, to satisfy this court that during the irrigation season, when the water is needed for the growing of crops, that Colorado takes every drop of water in the river which it can possibly secure?

Mr. Justice PECKHAM: How much did Mr. Chew say was taken out by seepage or by evaporation?

Mr. LOOMIS: I do not know that he testified about that. Mr. Carpenter, however, the State Engineer for Colorado, testified that it would be from one-half to two-thirds. One witness makes it seventy-five per cent.; other witnesses two-thirds. I think two-thirds is a fair average.

Now, if any more testimony is needed on that proposition, I want to call attention to the claims of counsel as to what this water has done for the State of Colorado. We refer to the argument contained in the brief filed by the State of Colorado, as to the wonderful things the use of this water has done for the State. Of course, it is placed in the brief for another purpose, but I shall use it in this connection for my purpose. They go on to state the amount of capital invested in canals in the Arkansas valley, to wit, $4,000,000; that the census reports for 1902 show that there were 300,000 acres irrigated in this valley by the 95 systems; that the number of farms was 7,451; that the value of the land runs from thirty to more than five hundred dollars an acre. They give the products of the valley and the number of factories supported absolutely by the use of this water, and then at the end state that the population of the immediate valley of the Arkansas river, wholly dependent upon the use of the water for support, is now about 175,000.

Mr. Justice WHITE: That is the population in Colorado?

Mr. LOOMIS: In the valley of the Arkansas river in this irrigation district.

Mr. Justice WHITE: From where this stream emerges from the mountains and goes down to the plains?

Mr. LOOMIS: Yes, sir.

Mr. Justice WHITE: This irrigated area in Colorado is in the plains?

Mr. LOOMIS: Yes, sir; in these bottom lands.

Mr. Justice WHITE: And it is substantially the same valley as the valley in Kansas?

Mr. LOOMIS. Yes sir.

Mr. Justice WHITE: Except that there is a State boundary line that crosses it?

Mr. LOOMIS: Yes, sir; but there is a difference in the character of the soil. The water percolates into the soil more in Kansas than in Colorado. Counsel state that "the population of the immediate valley of the Arkansas river is now about 175,000. Without the right to apply to beneficial uses upon the lands the waters of the Arkansas river, the country would go back to its original barren condition, and the people who now occupy these lands would, of necessity, be driven out." Can it be seriously argued that if the water of the Arkansas river supports this large population, and that they would all be driven out if the water was not used, such a large consumption of water in Colorado does not materially decrease the flow of the river in Kansas?

Mr. Fellows, an expert put on the stand by the United States, who is district engineer for the reclamation service, stated this in regard to the depletion of the river in Kansas:

> "I am familiar with the irrigation in the Arkansas valley in the State of Colorado as it has been carried on for the last ten or fifteen years. The effect of this irrigation in Colorado, and the taking of water in Colorado for that purpose has materially

> lessened the flow of the river through the State of Kansas, I believe."

Mr. Newell, who stands at the head of the reclamation service of the United States Government, says:

> "As to the effect of the taking of waters in Colorado from the Arkansas river since 1884 upon the water supply that before that time had been applied to irrigation in the Garden City district, I will say that, in my opinion, the diversion of the water above has unquestionably reduced the amount which those ditches might have received. * * * It is presumable there will be less water in the river as irrigation is developed more completely in Colorado, and I assume that that is true with the ditches in Colorado, from Pueblo to the State line as they are, yes, sir. The more completely the water is utilized by the use and reuse in the ditches in Colorado, probably the less amount will escape into Kansas."

As corroborative of our claim that the use of the water in Colorado does take the water out of the river so that it does not reach Kansas, we call the attention of the court to similar conditions, brought out by the testimony of the Government, which prevail in New Mexico, Nebraska, and other States and Territories adjoining the State of Colorado. It is clearly shown by this testimony that the use of the water by Colorado for irrigation purposes has also materially diminished the flow of the water in these other States, and, in many instances, absolutely dried the rivers up.

I have a number of quotations of testimony upon that subject, but, in view of the shortness of my time, will not read them.

Now, the claim is made—I cannot speak of it at very great length—that there never was any water flowing in the Arkansas river from Colorado into the State of Kansas; that the bed of the Arkansas river in western Kansas was a dry channel, absolutely a channel composed of nothing

but sand. In view of the pleadings and the testimony of the witnesses this claim is almost startling. It is true there were times when the Arkansas river was dry. It is affected by droughts, as all rivers in the world have been affected ever since Joseph's time, when the Nile failed to overflow for seven years, and we do not claim there is always water in the Arkansas river. The witnesses have testified to the great drought of 1860, when there was no rainfall in the trans-Mississippi country from September, 1859, as I recall it now, until November, 1860. The witnesses testified to the drought of 1863, and there have been times when the Arkansas river undoubtedly was dry; but the testimony is conclusive that for large portions of the year great quantities of water come down from the mountains through the State of Colorado and into the State of Kansas, and this has always been so. Testimony is quoted very largely in the brief of Colorado from witnesses who have seen the river when it was very low or dry. I have taken the pains to go through the testimony of these same witnesses for Colorado to pick out instances where they testify not only in regard to the river being dry or being low, but where they also give testimony as to when there was plenty of water in the river. Those parts of the testimony are not quoted in the brief filed by counsel for Colorado. I have a number of such instances that I wish to call the attention of the court to, but, on account of the shortness of my time, I will refer only to the testimony of a few witnesses who testified for Colorado and whose testimony upon these points is not quoted in the brief for Colorado.

Take, for instance, General Frank Baldwin, who lived, I believe, in Colorado. His testimony is used for the purpose of showing that there was no water in the river. He testified:

> "We always expected to find flowing water in the river during the months of June, July, and August. I mean there would be running water all the time

through June, July, and August. I have seen it 25 feet deep and then again not an inch deep. The whole valley would sometimes be absolutely flooded with water. You could not get near the bed of the stream. Of course this would not be the average flow of the river at all, but that is the best description I could give of it. I would see it in that way, and then again there wouldn't be more than an inch of water. When the water was flowing during these months, say from Fort Larned to Fort Dodge, it would be on an average from one to two feet deep. It very seldom came up over the axle trees of our wagons. It was then fordable. I have seen it when it was not fordable. I have been tied up repeatedly on the banks of the river, as I have explained, on account of very heavy rains or cloud-bursts or something of that kind. That is what we feared more than anything else. We never thought of the high water of June, July, and August. We felt that we were always sure of finding water in the Arkansas river during those months, that is all, and during those three months we very seldom had high water from rains. This water during those months was attributed to the flow from melting snows."

Robert Roberts, a Colorado witness, testified that he saw the river in March or April, 1872, near Larned. "There was considerable water in the river at that time." He next saw the river about Dodge City. "River had a good deal of water in it at that time." Galbraith, another Colorado witness, went up the river from Great Bend the last week in May, 1866. "There was plenty of water there." James Gallena, a witness for Colorado, was familiar with the Arkansas river in Kansas. He came to Kansas in 1866. When he first saw the Arkansas river in September, 1866, the water was about three feet deep. The river at that point was about 350 yards wide. The stream of water was about 200 yards wide.

B. D. Spencer, of Colorado, a witness for that State, said that in 1864 there was plenty of water in every part of the

river he saw. A. Z. Sheldon, placed upon the stand by Colorado, meandered the stream for the Government in 1869. "There was water enough then in the stream to irrigate half of Kansas." J. S. Logan, a witness for Colorado, testified that "The river had a uniform flow clear down from Colorado to Kansas, in April, 1865."

And so on. Counsel quote from travelers who have written accounts of their travels, and have omitted some statements which they made to show there was water in the river. Here is a quotation made from Major Pike. They quote from him to show that when he traveled up the river there was no water in it; but this portion of his account is omitted:

> "After ascertaining that the Spanish troops had ascended the right branch of the main river, we marched at two o'clock. The Arkansas appeared at this place to be more navigable then below, where we first struck it; and for any impediment I have yet discovered in the river, I would not hesitate to embark in February at its mouth and ascend to the Mexican mountains with crafts properly constructed."

But in regard to the flow of water, the principal difficulty counsel will have in trying to impress the court with the proposition that there was no water flowing in the Arkansas river from Colorado into Kansas is the pleadings of these defendants, which I understand admit that there was practically a flow of five hundred cubic feet of water running from the State of Colorado into the State of Kansas. Professor Carpenter, State engineer for Colorado, has also testified upon this subject. He says it is a liberal estimate, but he testifies that there is a flow—an average flow, I take it—of from five to six hundred cubic feet of water running from the State of Colorado into the State of Kansas, and I do not think it is necessary for us to go further than that to show

that there is a substantial stream of water flowing from Colorado into Kansas.

It is not for the State of Colorado to say that it is only a little river anyhow, because if it is only a little river we want it. They may say it is variable and intermittent, but we want the waters even if they are variable and intermittent. The same thing is true of our rains. We do not get them just at the time we want them, and frequently on account of it our crops are dried up. We have droughts; but we would not part with the rains we have even in western Kansas. We want as much of the rains as we can get and as much of the waters of the Arkansas river as we are entitled to, and it is no answer for Colorado to make to us that if they are taking this water it is only a little river and does not amount to much and that we are not damaged.

Now, I must speak a moment about the seepage or return water. Counsel for Colorado claim in their brief that the water is used in Colorado in such a manner that it percolates into the soil and returns to the river, and that the flow of the river is more constant than it otherwise would be; that Kansas is really getting more water than if Colorado did not use it for irrigation purposes. In other words, that the State of Colorado in the use of this water is really a benefactor to the State of Kansas; and they have a good deal of sophistry in this case from many witnesses upon that proposition. But when the court realizes that two-thirds of this water is evaporated or goes into plant life and is absolutely lost to the stream, it will understand that there is nothing in the argument as to seepage water.

Another thing about seepage water. It was gone into very carefully by the witness Cressey, an irrigation superintendent of the State of Colorado. He shows how the water in the irrigation season is taken up, the whole flow of the river, and tells where the seepage water is returned, and what ditch is goes into; that it is taken up by an arroyo, or another ditch; and he takes one ditch after another and ex-

plains where the seepage of each ditch goes to. At the conclusion of his testimony he states that the only seepage water that gets into Kansas is the seepage water from the last ditch nearest to Kansas. There is other testimony upon that point, and Mr. Newell, the head of the reclamation service of the United States government, testifies to it also. He says on page 1278:

> "I understand it is the object of the present system of ditches in Colorado, and that they were so located, to intercept the flow of the seepage. I assume that practically all of the seepage water that goes down into the Arkansas river in Kansas, or that goes to reinforce the flow of the Arkansas river is the seepage water from the eastern or last ditch down the river."

Mr. Reid, of Roswell, New Mexico, district engineer of the United States Geological Survey, gives some testimony on this point. It sounds a good deal like two and two are four, but it bears directly on this proposition:

> "It is my experience that if you take all of the water of the river there is not as much below as there was if you had not taken it. If I drink up a glass of water there is not much left. If you take the water out of the river and take it back onto land for the irrigation of it, and one-half of it or one-fourth or three-fourths of it evaporates and goes into plant life, the part that evaporates and goes into plant life certainly does not tend to supply the flow of the river below."

And Mr. Hall, of New Mexico, testifies that this two-thirds is a permanent loss to the river at the time of the irrigating season.

In closing upon this branch of the case I wish again to refer to Professor Carpenter, the principal witness of the State of Colorado, and to quote his testimony:

> "From one-half to two-thirds of the amount of water used in irrigation is evaporated and goes into

plant life. If 750 cubic feet should be used for actual irrigation, from one-third to one-half might find its way back to the river, and from one-half to two-thirds disappears by evaporation, leaving then, only one-third to one-half to go back into the stream. If one-third finds its way back into the stream by one use for irrigation, when that would be used the second time the same rule would apply, and after two usages there would be about one-ninth of it left, and when this should be used the third time, about one-twenty-seventh. * * *

"The water in the Arkansas river from Cañon City to the Kansas State line is used over and over again, as often as it can be used. The oftener it is used for irrigation the greater the proportion of the original amount that flowed down the river is lost to the general flow of the river. If this system of irrigation, as practiced in the valley of the Arkansas river from Cañon City down to the State line, should repeat the application of the water to the irrigated fields half a dozen times, the greater per cent. of the original amount of water would be evaporated and would find its way into plant life."

Why, Colorado would liken itself, in its irrigation system, to the beneficence of the Almighty, who scatters His blessings with a lavish hand without in the least diminishing the source of supply!

Now, with reference to the damage to the State of Kansas. They say "If we do take your water and you have a right to it, still we do not damage the State of Kansas any." Upon this proposition I wish to refer to the testimony I have already read as to the immense benefit which Colorado derives from the use of this water. They say that they support a population of 175,000 people by the use of this water. Now, if Colorado can do so much with the water I am satisfied the people of Kansas have intelligence enough to get some benefit out of the water themselves. With respect to this matter I wish to again quote from the testimony of Professor Carpenter:

"I stated in my direct examination that irrigation was very useful and profitable and absolutely necessary in the Arkansas valley in Colorado and I think that would even be true in the western part of Kansas. The conditions prevailing in the eastern part of Colorado are largely the conditions prevailing in the western part of Kansas. If water enough could be found to irrigate the whole valley a good deal larger area, and therefore a good deal larger number of people, would be benefited if it could apply both to Colorado and Kansas. Water and moisture is just as much a necessity to raise apples in western Kansas as it is in Colorado."

I have not much time left to talk about the law. I do not believe the law involved is very difficult of application. If Colorado claims this water, if Colorado takes this water, if Colorado damages Kansas by taking the water, certainly Kansas has some legal rights in the premises, unless, as a matter of law, Colorado is entitled to take it all and has the right to use it all. This we deny. We claim they cannot produce an authority or the statement of a single text-book writer which will justify them in their extreme claim that they can take all of this water if their necessities demand it. And their necessities do demand it. If they can take all the water in the Arkansas river from Kansas, they can take all the water in the Platte river from Nebraska and all the water in the Rio Grande from New Mexico, and every State in the arid West can do with the water within its borders as it sees fit. Now, Kansas was organized as a Territory on May 30, 1854. It extended on west to the crest of the Rocky mountains and included a large part of the present State of Colorado. Very shortly after the organization of the Territory the common law was adopted as the law of the Territory, and it applied to that part of Colorado located within the Territory as well. It included the doctrine of riparian rights. The common law, including the doctrine of riparian rights, has been applicable in Kansas ever since. Kansas was organ-

ized as a State on January 29, 1861. Colorado was created as a Territory in the following February. The doctrine of riparian rights has been in force in Kansas from the time the Territory was organized down to the present time.

When Kansas was organized as a State it was granted sections 16 and 36 for school purposes, and had an absolute title to those sections. Many of them were along the Arkansas river. In 1863 it was granted every alternate section of land in fee simple for internal improvements, meaning the construction of the Atchison, Topeka and Santa Fé railroad, and these alternate sections stretched all along the Arkansas river through central and western Kansas; so that prior to the enactment of legislation by Congress in 1866, legalizing the use of water on the public lands for irrigation purposes in the arid States, Kansas had obtained a fee simple title to a great many acres of land along the Arkansas river, and as to these lands Kansas had vested rights in the flow of the water in the Arkansas river, and these vested rights were of such a nature that they could not be taken from the State by Congress, by Colorado, or by anybody else. And I assert that in addition to these rights which it possessed by reason of being the owner of these properties, it possessed a right as a sovereign State to the flowing water of the streams in the State of Kansas.

Mr. Justice WHITE: Is that an assertion of riparian rights? You say she had a right as a sovereign State to the use of the flowing water?

Mr. LOOMIS: Yes, sir.

Mr. Justice WHITE: Is that an assertion of the principle of riparian rights as known to the common law, or is it an assertion of a right flowing from some supposed grant in the act of Congress to which you refer?

Mr. LOOMIS: No; there is no direct grant. It is a statement of my own as to the law.

Mr. Justice WHITE: Is it an assertion of riparian rights?

Mr. LOOMIS: Yes, sir.

Mr. Justice WHITE: Then, if that be an assertion of riparian rights, how does it comport with the 400 ditches that Kansas had, by which she was drawing off this water, when the rights of those lower down the stream be considered?

Mr. LOOMIS: I consider that to be a matter for the State itself to determine as between riparian owners and irrigators.

Mr. Justice WHITE: Well, if it is a matter for the State itself to determine within her borders, why would Kansas, as a State, have a right to determine that as to the people living below, if the 400 ditches did to the people below exactly what you assert Colorado did to you?

Mr. LOOMIS: No, sir. No; I will state my ideas in regard to that. In the first place, I believe your Honor is mistaken in regard to the number of ditches.

Mr. Justice WHITE: Well, 400; I think that is what counsel said yesterday. I took it down that way.

Mr. LOOMIS: My idea of the rights of the various States along the river under the doctrine of riparian rights is that the rights of the States are absolutely similar in nature to the rights of the various private owners along a river. Say there are a dozen different farms scattered up and down the stream; each one of those farms is entitled to certain riparian rights, and the right of each one is subject to the equal rights of all the others. Now, my judgment is that in asserting this principle of riparian rights in Kansas that it is no greater than the rights of Colorado——

Mr. Justice WHITE: Wait a moment. When you are asserting in your argument that the proof in this case shows that seventy-five per cent. of the water taken for irrigation goes into plant life, and cannot be returned, are you not asserting a proposition which, in its terms, necessarily denies the right to irrigate to anybody, because if seventy-five per cent. of the water which is drawn out is evaporated and goes into plant life, and you place yourselves in the position of a riparian owner, and you cannot do this without destroying

seventy-five per cent. of it, and your duty as a riparian owner of land be not to deprive other people of any, how can you enjoy that right (irrigation) without destroying the rights of others below, just as Colorado cannot enjoy her right without destroying yours?

Mr. LOOMIS: Well, if your Honor pleases, my idea about that is that each of the States are entitled to equal rights in the use of this water, and when a controversy arises the court should determine the extent to which each State may use the water. Now, we would be perfectly satisfied if the court can determine the amount of water which Colorado should have and the amount of water that Kansas should have, to permit Colorado to use its share in any way it sees fit. Of course, if seventy-five per cent. is lost by evaporation by reason of the system under which they use the water, the loss would not be as great, I imagine, if the water were not carried so far from the river. It is carried in a direct line some twenty miles from the river, and is scattered over a vast scope of territory. If it were more limited in its use, the amount of evaporation would not be so great. The use of the water could be so circumscribed as to amount to a reasonable use, having in consideration the rights of other States along the stream. Now, Kansas does not want to be ungenerous or selfish in the manner in which the water is used or as to the extent of the water that may be used. It concedes that Colorado is entitled to a reasonable use of these waters.

Mr. Justice WHITE: Then do you not concede the legal principle upon which your case rests if you concede that? If it is impossible to use water for irrigation without evaporation, and seventy-five per cent. of the evaporation—and I don't say there is one per cent. of evaporation, but I am taking your statement of fact in this case—if it is possible to use water for irrigation without an evaporation of seventy-five per cent. or thirty per cent. or forty per cent. of the water used, does not that proposition come to this, that the use of

water for irrigation is inconsistent with the principle of the common law as to riparian rights?

Mr. LOOMIS: I hardly think it goes that far, if your Honor pleases. I believe the water can be used in Colorado for irrigation purposes. There can be a reasonable use of it, and at the same time respect the rights of Kansas. Now, what we are contending for is some recognition of our rights. At the present time our rights have no recognition whatever by Colorado.

Mr. Justice DAY: Suppose the water had to be returned to the river without any right of irrigation from these ditches in your State. Would the use of the water in Colorado under such circumstances be a damage to Kansas?

Mr. LOOMIS: Undoubtedly it would. Counsel who has preceded me has shown the extent to which this water goes into the underflow, sub-irrigates the soil, and that this underflow has been lowered very considerably by the extreme use of the water in Colorado. This underflow, when allowed to flow in its ordinary way, furnishes a great deal of moisture to the crops of Kansas, without applying it to the surface of the soil.

Mr. Justice DAY: And without any artificial aid?

Mr. LOOMIS: And without any artificial aid. It can also be pumped, and used upon the ground from which it is pumped without being carried to other lands.

Mr. Justice PECKHAM: What do you say the riparian rights are at common law?

Mr. LOOMIS: The use of the water for domestic purposes, for manufacturing purposes, and, as our Supreme Court has recently said——

Mr. Justice PECKHAM: The common law is that the water should be returned to the stream from which it is taken?

Mr. LOOMIS: That is our usual acceptation of it, but our Supreme Court has recently passed upon the question in the case of *Clark vs. Allaman*, reported in 71 Kansas, 206. In that case the court holds, citing a good many authorities,

that the waters of a stream may also be used for irrigation to a reasonable extent, the right of each riparian owner being dependent upon the equal right of all the other riparian owners.

Mr. Justice HOLMES: There seems to be a long-standing difference between the decisions of the different States in that matter, some of the States, probably in accordance with the English decisions, holding that you can return the water substantially undiminished, the owners, however, holding that it must be undiminished by use.

Mr. LOOMIS: I believe that the doctrine of "reasonable use" should apply between Kansas and Colorado, because if our court holds under the law of raparian rights that the riparian owner is entitled to a reasonable use of the water, Kansas certainly must concede a reasonable use of the water to the State of Colorado, and in the use of this water we do not want to be unreasonable with Colorado and we do not want them to be unreasonable with us.

Mr. Justice DAY: What does that include—"reasonable use" to Colorado? That is rather indefinite.

Mr. LOOMIS: Well, it is——

Mr. Justice WHITE: What are the rights of the State of Colorado and the rights of the State of Kansas. It is contended that we should sit as a sort of amicable compounders for the purpose of determining how much water the State of Colorado may get out of this basin and how much the State of Kansas may get out of it; that we are to sit here, not to administer the law, but to act as a sort of amicable compounders to adjust the relative claims and determine in our judgment what Kansas ought to have and what Colorado ought to have, not by any principle of law, but some system of amicable adjustment? I can understand that a State court, exercising the sovereign powers of government, judicial powers, may do so, if the State has formulated or laid down some rule of reasonable use; but upon what principle do you predicate the power of this court to sit as amicable

compounders between Kansas and Colorado, and not determine their legal rights, but determine what, in its discretion and judgment, is the wise and just dealing which ought to prevail between those two States irrespective of the principles of the law?

Mr. LOOMIS: Well, perhaps I am going too far in trying to be generous and in conceding that the court might give to Colorado a certain amount of this water, which, in its judgment, would be deemed reasonable; and we will be satisfied, of course, if the court applies the strict rules of the common law, with reference to this controversy and holds that Kansas is entitled to its riparian rights. We will also be satisfied if the court by judicial decree determines that Kansas has some rights in the waters of the Arkansas river. That is the most important thing, if your Honor pleases, to determine whether Colorado is entitled to it all; whether Colorado can take every drop of the water, and whether Kansas has any right to any portion of it.

Mr. Justice WHITE: Now, if it be true—which you say it is—in your case, that your State court has decided that a reasonable use of the water for the purpose of irrigation belongs to the people of the State of Kansas, and if it be assumed—and I do not say it ought to be assumed—that such a use as you describe is the use prevailing and sanctioned in the State of Kansas, is wholly incompatible with riparian rights, as known at common law, how could the State of Kansas stand at this bar and say, "We deny riparian rights as between our own citizens and enforce a system which is destructive of such rights," and yet ask that such rights be enforced as to the State of Colorado?

Mr. LOOMIS: The law enforced in Kansas amounts to this, that the right to irrigate is subordinate to and dependent upon the rights of riparian owners. The rights of riparian owners are prior in point of right, and if any controversy arises between the riparian owner and the irrigator who claims under the doctrine of prior appropriation, the rights

of the prior appropriator or irrigator are subordinate to the rights of the riparian owner, and the only way by which the rights of the riparian owner can be taken away from him is by the exercise of the law of eminent domain; but the right of the riparian owner is there and it is vested. That right is recognized by our Supreme Court, and it can only be taken away from the riparian owner by condemnation proceedings.

Now, if we have any prior rights, and those rights are destructive of the rights of Colorado to irrigate, I do not know that Kansas should be called upon to give up those rights merely for the benefit of Colorado. If it has vested rights in the waters of this river, it believes those vested rights should be protected. It does not want the protection of those rights to such extent as to absolutely ruin the irrigation of Colorado, but it wants the protection of its rights, and its rights are prior to the rights of Colorado.

Mr. Justice BREWER: You say Kansas is prior in point of time because it was settled first?

Mr. LOOMIS: Not only that, but because it was organized as a territory first, organized as a State first, and because it became possessed of sections 16 and 36 for school purposes and of alternate sections of land along the Arkansas river for internal improvements long prior to the organization of Colorado as a State or the vesting of any irrigation rights in Colorado.

Mr. Justice BREWER: All within her own borders?

Mr. LOOMIS: Yes, sir. With respect to the right of a State to interfere with the rights of other States in the flowing waters of interstate streams, I think the doctrine is very well stated in "Farnham on Waters."

There was a case which arose in Colorado, to which I would like to call your Honors' attention, where the dispute arose between an appropriator in Colorado and an appropriator in Wyoming. The case came before Judge Hallett of the United States court in Colorado. The appropriator in Colorado claimed he could take the water because it was being

used within the borders of the State where the stream arose, and that his rights, therefore, were prior to the rights of the appropriator in Wyoming, notwithstanding the appropriator in Wyoming was prior in point of time. But Judge Hallett denied that doctrine and held that the one prior in point of time had the prior right regardless of State lines. That was the case of Hoge *vs.* Eaton, reported in 135 Fed., 411.

Mr. Justice HOLMES: That was a question simply between private citizens?

Mr. LOOMIS: Yes, sir.

Mr. Justice WHITE: I want to ask another question. This case has been argued once or twice and there are other cases here, cognate cases, which we must consider. Now, as I understand it, efficacious irrigation on any stream within a broad watershed is absolutely incompatible with the doctrine of riparian rights, because you cannot draw off the water and spread it over the land and pump it, as it were, into trees and grass and plants, and the thousands of manifestations of absorption which exist and yet retain such efficacious quantity as is necessary to give, even among irrigators, the lower man the same right that the upper man has. The moment you fix a right of irrigation you fix a right in and of itself, a recogntion of a right simply to draw off and hold from the body of that stream a quantity of water which may deprive somebody on the lower part of the stream of the very right which you yourself assert; and in consequence upon that all the western or irrigating States confronted with that difficulty and recognizing the impotency of the riparian rights system with reference to irrigation have passed laws regulating the appropriation of water. Those laws are the manifestation of the fact that is deemed a matter of legislative power in all the States or the States needing irrigation. In the continent of Europe that is recognized as a rule, that it must be controlled by legislation, and that it is impossible to conduct irrigation hand in hand with the recognition of the

principle that each individual along the stream has the same right to the water as every other individual. Now, if it be true as a matter of legislation, on what sovereignty does the question of legislation depend, where the right of irrigation is impossible to be regulated, by the situation of the stream, by any of the local authorities along the line of that stream? That is a question to which I wish to draw your attention. I use the words "amicable compounders"—my associate calls my attention to it—perhaps inadvertently. I used it because it is a term of law to which I have been bred. In the civil law that means a party or body called upon to adjust rights according to their conception of equity wholly divested of any rule of law. In other words, they may say: "I think the law is so and so, but I am not going to enforce it, I am going to be just." That is why I use the words "amicable compounders." If there is no law governing, and surely we must adjust it reasonably, then your proposition is that we must adjust it reasonably, without any law, according to our own notions. In other words, we must apportion out this water by the cupful or gallon to whoever we think entitled to it.

Mr. Loomis: In the first place, speaking about these various States, I wish to call attention to the decisions of a number of the States—California, Oregon, Washington, Nebraska and Dakota—where part of the State is semi-arid and part of it is humid. Now, in all those States I have referred to the courts have met the proposition in this way: They allow the use of water for irrigation purposes, and the statutes provide for it, but at the same time the courts in those States recognize the prior rights of riparian owners and have not deprived them of those rights. I think that principle applies here. Here are two States; one is arid and the other partially humid. Now, the State of Kansas ought not to be deprived of all its rights in the water merely to accommodate the State higher up. The rights of both States can be protected by the decision of the court, in my judgment. There was a decision rendered, I think, by Judge Ross, of California, apportioning the water between a riparian owner in California and a prior

appropriator in Nevada, and the court managed to apportion the water between them in a way that seemed satisfactory, and that led me to believe that this court might find a reasonable rule for apportioning the water of the Arkansas river between the two States.

Mr. Justice HOLMES: Your proposition is that if this court should be of the opinion that the common law is applicable, that the principle applicable to the controversy between two States is the principle of the common law; that the principle of the common law, at least in States situated such as those two States are, is the principle of reasonable use as distinguished from the principle of absolute return of all of the water;—that under those circumstances it might be within the power of the court to declare that a certain use is unreasonable, and, therefore, by implication, to ascertain the limit of the reasonable use?

Mr. LOOMIS: Yes, sir. I do not believe that is impossible. It seems to be reasonable. Here is a controversy between two States. We have certain rights. Those rights have been invaded. We cannot take our troops up to Colorado and fight it out; we cannot adjust it by diplomacy. There is no tribunal we can go to in the world but this, and we would like to have our rights under the principles of the common law, which we believe are prior and which ought to control. If the court does not wish to adopt the principles of the common law, any other reasonable principle which the court wishes to adopt will be satisfactory, but we want our rights protected. We believe we have rights. We believe those rights are based upon the common law—the doctrine of riparian rights. We are willing to concede to Colorado the reasonable use of the water, but no more, and we claim we are entitled to a reasonable use of the waters ourselves.

I thank your Honors.

(Oral argument of Mr. Platt Rogers for the Arkansas Valley Sugar Beet and Irrigation Land Company, a defendant, not supplied.)

ORAL ARGUMENT OF MR. DAVID C. BEAMAN, SOLICITOR FOR DEFENDANT THE COLORADO FUEL AND IRON COMPANY.

WASHINGTON, *December* 18, 1906.

Mr. BEAMAN: May it please the court, when the demurrer in this case was decided a question was propounded by the court to the complainant as to whether or not it was necessary to make other parties defendant to the suit, and, solving that question for herself, Kansas has made some twenty private corporations in Colorado defendants to the suit. All of them except the one which I represent, The Colorado Fuel and Iron Company, are ditch companies engaged in irrigation. The amended bill charges that these new defendants are engaged in the use of water for irrigation, and asks that they be restrained therefrom. The answer and the evidence on behalf of The Colorado Fuel and Iron Company show that it is not engaged in irrigation, never has been, and never expects to be; that it is purely an industrial concern, engaged in mining iron ore and coal and the manufacture of coke and steel and iron products. So that, as far as this company is concerned, the bill is wholly misconceived and ought to be dismissed now without taking up any further time to defend it. This testimony stands undenied either in the record or in the briefs or anywhere else.

But if we must go into a defense, then I may first describe the interest which the people of Colorado have in the existence and operations of this company. It has an investment in the Arkansas river drainage exceeding $30,000,000 in the way of coal mines, coke ovens, and steel works at Pueblo, the latter producing a greater variety of steel and iron products than any other concern west of Pennsylvania. It employs about 16,000 men. These employés, with their families and the tradesmen who occupy the towns that have grown up

about these various plants, total about 75,000 people. Nearly one-half of the population of the drainage area of the Arkansas river in Colorado depends more or less directly upon the operations of this corporation. It pays out every month to its employés a little over $600,000, and every year a little over $9,000,000. This embraces the pay rolls alone, and does not include the purchase of property and material. It mines its own iron, its own limestone, its own coal, and nearly everything that enters into its finished products. It buys little or nothing. Now, in order to carry on this business it is necessary to use a great deal of water. In the steel works alone there are taken into the headgates a little over 10,000,000 gallons of water every twenty-four hours. Of that about twenty-five per cent. is consumed by evaporation and in various ways in the making of steel and iron products. Seventy-five per cent. of it is returned to the Arkansas river.

Mr. Justice HARLAN: How returned?

Mr. BEAMAN: Just by letting it flow right out through the waste gate from the steel works in one volume into the stream. And this, remember, occurs every day in the year, summer and winter, so that so far from Kansas being injured by the operations of this company, there is turned into the Arkansas river 7,500,000 gallons of water every day in the year, regardless of the quantity otherwise flowing in the river, thus equalizing the flow. It has four reservoirs in the Rocky mountains which hold a total of about 15,000,000,000 gallons of water. The largest of these reservoirs is at the head of the Arkansas river, the dam being built across what is known as the Lake fork of the Arkansas, near Tennessee Pass. The history of that reservoir I will give presently, as it enters into and is, I think, an important question in the determination of this case, and shows that this court cannot possibly enter a decree against this company even if it can as to the Arkansas river at all.

Now, in order to secure a right to water from the Arkansas

river, in addition to the impounding of flood waters in these reservoirs, this company bought 8,500 acres of riparian lands along the river bottom, and with these lands bought the water rights pertaining thereto. These were some of the oldest water rights on the Arkansas river, some of them dating back to 1860. In order to utilize this water for its steel works, this 8,500 acres of land has been abandoned so far as farming by irrigation is concerned, although with the progress of dry farming and more intensive cultivation, this land is being to some extent cultivated without water.

Now, the situation of these steel works, the situation of every coal mine and every coke oven and every acre of land this company owns in that drainage on which it has a plant, is along some tributary of the Arkansas river or on the Arkansas river itself, so that its ownership of lands is within the narrowest doctrine of riparian rights. The steel works are situated on the delta formed by the entrance of the San Carlos river into the Arkansas river at Pueblo. So that, upon the strictest doctrine for which Kansas contends this company can stand, and by the same sign win, if Kansas is to win. But if there are to be no people in that part of Colorado, and no farms, there will be no need for any products of steel or iron, or any coal or coke, and therefore this company stands equally interested in the main question contended for here by the other defendants.

Some reference has been made by other counsel to the unkindness and ingratitude of Kansas in bringing this suit against these ditch companies, one of which at least has a ditch running down into Kansas. The Colorado Fuel and Iron Company puts into Kansas every year, at points west of Hutchinson, coal and coke worth at points of delivery $1,500,000, and if that were shut off the fuel famine now prevailing in the northwest would not be a circumstance to the situation in western Kansas, which has no other coal supply that is adequate and near enough to save the people of that section of the State. There is once in a while a par-

tial coal famine there even as it is. There are, by other companies, put into that same country about $500,000 worth more. So that Kansas, her beet industry and every industry and domestic need she has west of Hutchinson is wholly dependent upon the coal mines of the State of Colorado for their fuel, and it will be a sorry day for western Kansas when those coal mines are shut up—which I take it will never be.

Passing, then, from the riparian right which this company has, I want to refer to this reservoir near Leadville known as the Sugar Loaf reservoir. In 1887 the value and reclamation of the arid lands began to be a subject agitated in Congress, and in that year an act was passed authorizing the Geological Survey of the Government to select and withdraw from settlement throughout the mountain country sites for reservoirs to be created by the United States, and this Sugar Loaf site of about 1,250 acres at the head of the Arkansas river was selected and withdrawn from settlement. Nothing was done in the way of utilizing it up to the year 1897, when for some reason or other the Government concluded not to do anything further with that particular reservoir, and an act was passed authorizing the sale of the site at public auction. Without reading the preamble, the substance of the act provided as follows: That it should be sold at public auction after thirty days' notice at a price not less than $2.50 per acre. The purpose of it being

> "to secure the early building and permanent maintenance of a reservoir for the storage of water to increase the flow of the Arkansas river as contemplated by the Government in reserving the reservoir sites of the arid regions: but nothing herein shall prevent the purchasers or their assigns from using said water for mechanical, manufacturing, or other purposes which does not materially lessen said contemplated increased flow; provided that nothing in this act shall be construed to deprive the State of Colorado of the control of the water in any reservoir which may be constructed on this site by any person or corporation or association under the regulations provided by the State laws in such cases."

This act is given on page 21 of my first brief.

Now, this court, in the case of Wisconsin *vs.* Duluth (96 U. S., 379), where it was complained that the city of Duluth was destroying a navigable river by cutting a canal, and where it appeared that Congress had authorized it to be done, said:

> "When Congress has, by an expression of its will, occupied the field, that action is conclusive of any right to the contrary asserted under State authority."

Now, I take it that so far as that Sugar Loaf reservoir is concerned Congress has indicated who shall control the disposition of its water, and that it has removed every drop of water that may ever come into the Sugar Loaf reservoir, or run out of it, from any other control, judicial or otherwise.

That same act is important in connection with another subject which I will take up as soon as I say a few words about the underflow from the Arkansas river. This underflow theory has so thoroughly saturated some of the citizens of Kansas along the Arkansas that they seem to believe that it is a cure for most of the ills of human life. Their belief in original sin is a mere flitting suspicion compared with the solidarity of their belief in the virtues of the underflow. To show how little they regard the laws of nature and how little the underflow itself regards these laws, I want to refer to their witness who said it siphoned over a divide in one place and to another who said he had a well thirty-six miles from the Arkansas river which would rise and fall as regularly as the Arkansas river rose and fell, being fed from the underflow. Upon examining into the elevations we found that the bottom of his well was 125 feet higher than the Arkansas river, the alleged source of the underflow, showing how little this playful underflow cares for the law of gravity, and how firmly they believe in its omnipotence.

Something has been said by counsel who preceded me, about this suit not being a Kansas suit. Now, that is not said without support in the record, nor in a frivolous way.

This court decided, in New York and New Hampshire *vs.* Louisiana (108 U. S., 76), that it would inquire into a suit brought by a State to see whether it was really brought in the interest of the State or for the interest of some private individuals. Now, as said by other counsel for defendants, when we got into the Garden City region taking evidence in this case, and into the irrigated region of western Kansas, her counsel had some trouble in "lining up" their witnesses to support this suit, and if you will examine the cross-examination, as quoted in the briefs, you will find that every one of those witnesses thought this suit was for the benefit of the irrigators, and they didn't know and don't know today, unless they have read these briefs, that Colonel Murdock, editor of the Wichita *Eagle,* testified that the position which he took in this suit was adverse and opposed to the irrigation interests. Mr. Murdock also testified that when his attention was first called to the Arkansas river, he charged it to those irrigators in western Kansas and began to "roast" them, through the *Eagle,* for depleting the flow. I suppose the result of that charge was reflected in his next year's subscription list, and not being satisfactory, he elevated his sights and took a shot at Colorado, and he has been firing at us ever since. Now, you will also find further that it is claimed here in the record by the attorneys for Kansas, that long before Colorado ever threw a shovelful of dirt for irrigation, Kansas people had begun it in the western part of that State. So it appears that these Kansas bottom farmers were the pioneers in the business, and we of Colorado are but humble imitators, and are now to be punished for learning so well.

Now, I say that when this court reads the briefs—and I do not suppose you will find time to read the entire record; I wouldn't blame you if you didn't, because you will get the substance of the whole case out of the briefs—you will find that this suit was brought through the influence of four counties near Wichita, in the humid regions, while six river counties to the westward are opposed to it, and that all the balance

of the State east and west and north and south don't care a continental about it, except that they have been cajoled into passing some appropriations to maintain it. The case, so far from being a real complaint by one State against another, is, in the language of Murdock, a "racket," and that merely by a few farmers along the Arkansas bottoms, and not enough real damage shown to be worthy of a day's attention by this court.

Mr. Justice BREWER: But was there not a resolution directing the suit to be brought?

Mr. BEAMAN: Yes, sir, and I understand there was in the bond case which this court decided, and just referred to by me.

Mr. Justice HARLAN: Was Mr. Murdock at the bottom of this suit?

Mr. BEAMAN: You bet he was. He is at the bottom of almost everything in western Kansas. He is the inventor of the underflow.

Now, about the rise and fall of the water in wells along the river, which these gentlemen rely on so positively as proof that this underflow comes from the river—because when the river rises the underflow rises and when the river goes down that goes down. Let us assume that this underflow comes in from the adjacent highlands and runs into the river. When the river is low it runs into it and passes off without obstruction; when the river rises its water becomes an obstruction to the escape of the underflow, and of course the water in the river dams it up and it rises and flows back until it gets as high as the river. The river operates not as a feeder to the underflow, but as an obstructing dam to the escape into the river bed. And there is not a witness outside of these gentlemen, who, as I say, have tied onto the underflow, not a single experienced or scientific witness, that does not agree as to my proposition that that is where the underflow comes from and that is why it rises and falls with the river.

The mountain ranges of the mid-continent constitute an effectual barrier to the passage of moisture in the trade winds from the west, and this moisture being condensed by the low temperature of these ranges is precipitated thereon as snow and rain, thus depriving the eastern portion of Colorado of its due share of direct precipitation. This eastern portion is now merely taking out by ditches for irrigation and utilizing its share of the precipitation as it melts and runs down, and which, but for this barrier, it would have received direct from the clouds.

This the philosophers tell us is the cause of the aridity of the middle west.

Now, if there had been no mountain ranges and this water had fallen as it falls in other places, we might have gathered up the surface flow in reservoirs and cisterns, or in any way we had a mind to, and Kansas would have had no ground of complaint. She would not have made the contention she now makes. But, because it is delayed by the mountain ranges, and we have to wait until it melts and runs down before utilizing it, she says we have lost all right thereto, although she claims the right to appropriate it by underflow, which I have not yet learned is a riparian right.

Now, about the normal flow of the river which Kansas wants—and I want to say right here that I have challenged Kansas from the commencement of this case to formulate a decree which this court could enter. I say that human ingenuity will fail to formulate from the evidence in this case any kind of a decree that can be enforced. No witness has testified, or knows what the normal flow at the State line was, or is. And if a decree is formulated, nothing but divine omniscience can enforce it. It will take a Federal soldier or United States marshal at the headgate of every ditch in Colorado to enforce the decree, and then, being without administrative rules to guide them, they cannot enforce it equitably, for this reason: Suppose a decree shall, as Kansas counsel now suggest, provide that four hundred cubic feet of water per second of time shall pass the boundary of Colo-

rado and into Kansas, and a man is put there to enforce it. The next day there comes an enormous rainfall on the Purgatory, the Huerfano, the San Carlos, or some other tributary, and a thousand feet is going over the boundary. He had shut off all these ditches in Colorado to get the four hundred feet. The next day comes this flood. A lot of the ditches closed are away above the flood, but Kansas suddenly is getting more water than she wants. Who is to say to these people up there, "Open your ditches and take water?" and that thing is going to happen frequently during the year, and it is as utterly impossible to write or enforce a decree in this case as anything that can possibly be imagined, and this whole thing is simply an academic discussion. There is nothing here that this court can decide or decree or enforce, and if it could draw a decree and enforce it, it would operate as a writ of ejectment on a million and a half of people and return to desolation a half million acres of the best farms now in the United States, the result of more than forty years' work of the pioneer.

Mr. Justice BREWER: Have they any system in Colorado or any other State to regulate any such thing in any of these ditches?

Mr. BEAMAN: They have, sir, and I am glad your Honor calls my attention to that. Colorado is divided into sixty-eight water districts, and each one of these districts embraces the drainage of a particular stream. There are ten water districts in the Arkansas drainage in Colorado, and there are ten district supervisors. They can ride or telephone to any point in their own or another district at any time. They know when there is a flood on one tributary, or a scarcity on another, and they regulate it in that way. And still we do have some trouble, because it is an extraordinary man that will sit still and see his crops destroyed for the want of water, when he can go out at night and open his headgate and get water. But still they get along all right, and the practical difficulties with the system adopted by the arid States are

very small, trifling indeed, and much less than one would suppose.

Mr. Justice WHITE: I desire to ask a question that is not very pertinent, but it is for my information. Is there a water district, if I may so speak of it, in any of these arid States which carries the water beyond the limits of the watershed in which the water is appropriated?

Mr. BEAMAN: No, sir; the districts are all laid out with reference to the watershed.

Mr. Justice WHITE: Now, under the system prevailing, as I understand it, in effect the area which contributes is the area which enjoys.

Mr. BEAMAN: Yes. There are, however, I will say, in order to be strictly accurate, one or two cases in Colorado where water is taken across a divide.

Mr. Justice WHITE: Well, that is what I wanted to know.

Mr. BEAMAN: Yes, but, as I understand it, the courts have not yet approved of it. It is done arbitrarily—as my colleague Mr. Rogers' ditch does in taking water down into Kansas—and nobody complains. It is done, usually, out of a river that has plenty of water in it. There is some taken out of the Grand river, I believe, and over to the other side of a divide.

Now, about the uniform flow of the Arkansas river. Kansas introduced a lot of witnesses who said that at the point where they lived they never saw the river dry. Now, that only proves that at that particular place, by reason perhaps of local springs and tributaries, the river was not dry. We introduced many explorers and army officers, and I say that an army officer or explorer who, when he first comes to a dry river, a revelation to him, will never forget it, and his statement is worth ten times more, although it is unsworn to, and simply written down as a matter of information, than that of a witness who is interested in the result of the suit, and I would rather accept the unsworn testimony of a disinterested explorer, recorded twenty, thirty or forty years ago, than the

sworn testimony of a great many men who are interested. Now, they have picked out those men, I take it, who live where the conditions of the river were such that it never was dry at that particular point. But that does not prove that at some other point at that time the river was not dry. In order to make out a case that the normal flow of the river in years gone by was as constant and steady as that of any other river, which they assert in one place in their brief, they must cover every day and every mile between Hutchinson and the Colorado line—every day in the year and every foot of the ground—because if it is dry at one place, anywhere in all that stretch, then their case must fail, so far as that contention is concerned. And, as said by Mr. Dawson, we have taken the explorations of Pike in 1806, and from then down to 1904, and have covered it by witness after witness, who say that where they saw it there was no water. Now, Mr. Loomis, for Kansas, I think, quoted General Baldwin. General Baldwin did say that at one place they found water. He also said that in another place they dug for water for their horses. Now, I have rearranged here, in my brief, in parallel columns, what the newspapers call the "deadly parallel," the 115 witnesses who testified for Colorado on that subject and the fifty-four who testified for Kansas, and I have given Kansas credit for all it could claim from its witnesses, and have made them say that the flow was constant, giving the year and the page of the record where you will find their evidence. Then I have cited what our witnesses say about it, in substance showing, beyond dispute, that it has always been an "intermittent" river.

An adjournment was thereupon taken until December 19, 1906, at 12 m.

DECEMBER 19TH, 1906.

Mr. BEAMAN (Continuing:) If the court please, perhaps there is an apology due from me for a couple of words that inadvertently slipped from my tongue yesterday in answer to a question by Justice Harlan. If I were not pressed for time, I would make ample apology.

Before I leave the question of the condition of the Arkansas river years ago, I want to call the attention of the court to the fact that skepticism is now creeping over counsel for Kansas as to the truth of their position on the early condition of the Arkansas river. I read from page 32 of their original brief:

> "The flow of the Arkansas river, prior to the time when the waters were diverted for irrigation purposes in Colorado, about the year 1890, covering a period of time beginning with the earliest records, information or observation of witnesses, was as constant and as uniform as the flow of the ordinary river."

On page 57 of their reply brief they say:

> "That it has gone dry during periods of extreme and protracted drought is as readily admitted as that it has been dry during the greater portions of the years since the defendants appropriated all its waters in the upper State."

They claimed also in their opening argument that the rights of Kansas were such that her citizens might, in the language of the brief, "stand on the bank of the Arkansas river and see the stream flow, even if they never dip a foot in it, drink from it, or make any beneficial use of it whatever." That is the cold-blooded doctrine which they asked this court to affirm when they began the case and seemed really to believe that Kansas was again "bleeding" and that Colorado was responsible therefor. From the lips of their own counsel you heard yesterday how much less they would now be satisfied with.

I would not for a moment conceal from the court the awful conditions in the Arkansas valley in western Kansas today, or remonstrate against your visiting it, even though you might see with your own eyes immense herds of cattle, bursting with grief—and grass, thousands of acres of corn, bowed down in sorrow, and the uncountable stacks of wheat, about which are clustered steam threshers—fired with indignation

and Colorado coal—smoking with rage, all because their disconsolate owners are deprived of the privilege, and really haven't the time, to sit on the river bank and see the water run by. You might also hear the Wichita *Eagle* now screaming for cars to remove this burden of woe from the bosom of the Arkansas valley.

I come now to the question of the right to control the waters of the State, or, as is stated, "interstate waters," and up to this point the attorneys for the United States and ourselves are together. We travel on the same road in perfect harmony as to the paramount importance of irrigation. But here we separate, and the attorneys for the Government, with, as I think, undue concern over the results to the Reclamation Service, have seen fit to take a position adverse to the control by the State of the waters within its boundaries, and especially refer to what they call "interstate" streams. Now, in the arid regions of the mid-continent there are nothing but interstate streams, except a few that sink in the plains like some in the San Luis Valley. It cannot be that an interstate stream is defined or determined by the fact that, like the Arkansas, it bears the same name in one State that it does in another. There must be a broader definition of an interstate stream. And yet that is the way this stream has practically been treated. If we take the Colorado river and follow it up from the Grand Canyon of Arizona into Utah, we find that just within the boundaries of Utah it forks and becomes the Green and the Grand. Does the interstate character of that stream cease at the forks, or does it continue on up the respective tributaries? We then follow the Grand river up into Colorado and find when we get into Colorado that it forks again and continues on, one fork as the Grand river, and the other as the Gunnison. Now, the Gunnison is wholly within the State of Colorado. Is it true that the waters in the Gunnison river are not interstate waters because they do not happen to have the same name in one State as in the other? Certainly not. Therefore it must be that any doctrine which declares that a different principle ap-

plies to an interstate stream from that which applies to a stream wholly within a State, is either impotent and self-destructive, or else it embraces every stream in the arid regions of the mid-continent, including the smallest rill in the mountains, and deprives every State of any control whatever of the waters within its boundaries.

The Constitution of the United States, Article X, says that the powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively or to the people. The Constitution of the State of Colorado on the subject of its waters has been read to you.

I want to now call the attention of the court to the course of legislation by Congress. Your attention has already been called to the Act of 1866. Following that was an act in 1867 which recognized beneficial rights in waters by virtue of the previous customs and local rules and regulations. On March 3, 1877, in relation to the desert lands, it is again said that the waters of all lakes, rivers, and other sources of water supply shall be held free for appropriation and use of the public for irrigation, subject to existing rights. Long prior to that, Colorado had begun to legislate upon the use of her waters, and this legislation by Congress refers to that and to any other State which had taken similar action. The Act of March 3, 1891, which grants the right of way through the public lands and reservations of the United States to any canal, reservoir or ditch company, says: "Provided, That the privileges herein granted shall not be construed to interfere with the control of the water for irrigation and other purposes under authority of the respective States or Territories," again recognizing the power of the States to legislate upon that subject.

The Act of August 18, 1894, known as the Carey Act, grants to the public land States respectively the desert lands therein contained, not exceeding 1,000,000 acres in each State, as the State may cause to be irrigated, reclaimed, and occupied.

The Act of February 26, 1897, amended the act in relation to the right of way for reservoirs and ditches, etc., by adding the following proviso:

> "Provided, That the charges for water coming in whole or in part from reservoir sites used or occupied under the provisions of this act shall always be subject to the control and regulation of the respective States and Territories in which such reservoirs are in whole or part situate."

This relates to reservoirs on public lands.

The Act of 1897, which I cited yesterday, in reference to the Sugar Loaf reservoir belonging to the Colorado Fuel and Iron Company, in its proviso, says: "Nothing in this Act shall be construed to deprive the State of Colorado of the control of the water in any reservoir which may be so constructed," thus conceding that up to that time and point the State of Colorado had control of the water that might be expected to come into the reservoir. The very act to which the Attorney General of the United States in his petition of intervention in this case refers, the Reclamation Act, which I believe is the greatest advance in national improvement that has been made by Congress in the last thirty years, has this embodied in Section 8:

> "Provided, That nothing in this act shall be construed as affecting, or intended to affect, or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use or distribution of the water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this act, shall proceed in conformity with such laws, and nothing herein shall affect in any way the right of any State of the Federal Government," etc., to the waters.

Under that act the engineers of the Reclamation Service all over the arid country, wherever they have undertaken to build a tunnel or a reservoir, have filed an application in the

name of the United States in the State Engineer's office the same as every private company and individual, and I am advised by them that when the works are completed they will go into the courts of Colorado and other States where the works are, and have the rights of the users under these enterprises adjudicated and decreed. And in no other possible way, I say to this court, can the users of water under the Reclamation Service of the United States have their rights defined, the quantity of water they are entitled to fixed, and these rights protected, except under the laws of the individual States.

Mr. Justice BREWER: Supposing a stream runs through two States and the laws of each State are different?

Mr. BEAMAN: That is just what I would like to have the Government's counsel answer. I have asked them that question in my brief. How are they to have a joint control between two States? I say the Reclamation people must go, as they have gone, into the State in which is the source of the water supply, and there get their right to appropriate the water, and obtain what is denied them in no State, the use of the flood waters, which is all they claim to utilize in these reservoirs, as all the other water is practically appropriated. No State will deny them the right to take the flood waters out of it and into another State for the purpose of developing the arid lands in the State below. But I want to say here, that so long as there are arid public lands in the State in which the water originates—and that in general one acre of public land is as good as another—there is no occasion to take the water or build reservoirs to utilize the land in a lower State. When the upper State is exhausted of public arid lands, then no one will object to the water going to the lower State, and any legislation required of the upper State to forward the ends of the Reclamation Service in that respect will no doubt be promptly enacted. But if any State does not grant such right, then the lower State must do just exactly what the law says it must do, take the consequences.

Mr. Justice BREWER: Now, following that along a little further, if the common law was in force in all this territory, including Colorado and Kansas, while the territorial organization existed, and if it be true that under the common law a man who is a lower riparian owner is entitled to the flow of that water at the normal flow, can he be deprived of that by any act of Congress in organizing a State or in granting patents to other riparian owners?

Mr. BEAMAN: If the riparian doctrine were enforced in Colorado, I do not know what the result would be. I have never worked it out. I stand upon the proposition that the riparian doctrine is not in force in Colorado.

Mr. Justice BREWER: Well, is not that doctrine the doctrine of the common law?

Mr. BEAMAN: It may be so. I will not dispute it. But it has already been denied by the legislation of Congress and the legislation of the arid States, which I have referred to, so far as the arid States are concerned.

Mr. Justice BREWER: Now, if the common law was in force in this territory at one time, how has it passed away?

Mr. BEAMAN: It has passed away by the organization of the States, giving them the sovereign right to legislate as to what shall be done with the resources within their boundaries.

Mr. Justice BREWER: That is, the organization of the States and the act of Congress have taken away from the individual riparian owner that which, by the common law, he had an indisputable right to by virtue of his riparian right?

Mr. BEAMAN: That question, or that particular phase of it, if your Honor please, has been assigned to and will be argued by other counsel better prepared to answer it than I am, but I will say that among the sovereign rights of the State is, I believe, the right to control its own resources for the necessities of its people, and if the State in which the water originates requires all the water for its people it has

a right to take it; that there is no bond or obligation, when it enters into the Union, that it will deprive itself of these rights or resources for the benefit of another State.

Mr. Justice BREWER: With a corresponding right to the people of the lower States to compel the water to stay in Colorado, can they make a dam and flood the upper country?

Mr. BEAMAN: No, sir; because that would be an actual invasion of the territory of Colorado. Colorado, by her water laws, invades no territory of Kansas, but her control of the water is similar to her control of the game and the fish, which are here today and there tomorrow, transitory in character, and she may consume them all, so that none go out into another State, and that other State has no legal ground of complaint. Comity between nations and States is an option, not a bond. If Kansas sees fit to seine all the fish out of the Arkansas river within her boundaries, she may do it, and we, who eat Arkansas river suckers in Colorado, must go somewhere else for our fish, for, although fish are food, and food is essential to life, there is no particular fish or food or water essential to life. The man in a shipwreck who first gets hold of a plank that will support but one may hold it against all comers. The State which needs its internal resources for its development and existence may use them against everybody.

Now, as I have said, Congress has, over and over again, in every act in relation to irrigation it has ever passed, acknowledged the sovereign right of the arid States to control the water within their borders in language as strong as it is possible to make it, and the United States Government now stands irrevocably committed to the right of these States to control the waters within their boundaries. If it had been understood at the formation of the Union that the powers necessary for the sustenance of their people and the maintenance of their prosperity were surrendered by the States the Union would never have been formed.

Mr. Justice WHITE: Now, let us take the Connecticut valley. Do you think that when the Union was formed, if it was deemed that the upper State—I am leaving out navigation now—could draw the water from the Connecticut river so as to leave the lower States deserts and blight them forever, the Union would have been formed—that the States would not have kept out and reserved their right of war to protect their people from annihilation? In other words, suppose two States—as explained, I am leaving out navigation—at the time of the formation of the Union understood that under the law of nations, if the upper State drew out all the water so as to reduce the lower State to absolute destruction, that that would not be a *casus belli* under the law of nations? That your doctrine of the right of the first State to take all, if she needs it, even though it be absolute destruction of the lower, would be a cause of war under the law of nations? Now, your claim is that with knowledge of that fact the right of war was given up and no power existed whatever to prevent the greed of one, or the wants of man, from wiping the other off the face of the earth. Now, that is your proposition.

Mr. BEAMAN: Yes, sir; that is my proposition.

Mr. Justice WHITE: That is a pretty broad proposition.

Mr. BEAMAN: I do not see why, if the appropriation of water in one of the States is necessary for the prosperity and the life of her citizens she may not take it. But there is a difference between the law in the humid States——

Mr. Justice HARLAN: Are you speaking now of waters that rise within the State, or do you include waters that rise in the State above and come down through two or three or four or five States?

Mr. BEAMAN: All of them, for the moment that the waters come within the boundaries of a State, they are within its control. Let me say right here that every arid State in the Union receives more water from sources within its boundaries than it does from interstate streams, and it is

infinitely more for the individual interest of every arid State, including Kansas, to have control of its water than to assert any interstate doctrine, for if Kansas can say to Colorado, "Let the normal flow of the Arkansas river come into the State of Kansas," then Oklahoma can say to Kansas, "Let the normal flow of the Arkansas river, augmented by your internal sources of water, flow down into Oklahoma," and so could the Indian Territory, and then the State of Arkansas, and thus the servient State would become the dominant State as to the water, and all rights of the upper States therein utterly destroyed.

Mr. Justice DAY: That is, you put the States in the position of independent nations?

Mr. BEAMAN: Exactly so.

Mr. Justice DAY: You take the same position this Government took with the government of Mexico in 1905?

Mr. BEAMAN: Yes, sir; and I will come to that in a minute. Now, as to the Connecticut river, a different rule applies in the humid region from that in the arid region, and that has been recognized by this court in the case of Clark *vs.* Nash (198 U. S., 361), which I have not the time to quote from, but you will find it discussed in my brief. If Massachusetts needed, for the actual sustenance of her people, all the water in the Connecticut river, then I believe she could take it, but that is a contingency and a possibility that never can arise, that she should take and actually consume it. There is a wide difference between taking the water and utilizing it, and absolutely consuming it, the latter a condition that never can arise in the humid region.

Mr. Justice WHITE: You must not understand my question as intimating an opinion. I was simply putting it to you so as to have the argument stand out in bold relief, and its consequences.

Mr. BEAMAN: Yes, sir; and I argue that more fully in my brief.

Now, I want to call the court's attention to the contest

between the United States and Mexico over the waters of the Rio Grande. The opinion of Attorney General Harmon (volume 21, 274), in discussing the question, says:

> "So it is evident that what is really contended for (by Mexico) is a servitude which makes the lower country dominant and subjects the upper country to the burden of arresting its development and denying to its inhabitants the use of a provision which nature has supplied entirely within its own territory. * * *
>
> "All exceptions, therefore, to the full and complete power of a nation within its own territory must be traced up to the consent of the nation itself. They can flow from no other legitimate source. * * * So strongly is the principle of general and absolute sovereignty maintained that it has even been asserted by high authority that admitted international servitudes cease when they conflict with the necessities of the servient State. * * * Whether this be true or not, its assertion serves to emphasize the truth that self-preservation is one of the first laws of nations. No believer in the doctrine of natural servitudes has ever suggested one which would interfere with the enjoyment by a nation within its own territory of whatever was necessary to the development of its resources or the comfort of its people. * * * The claim involves not only the arrest of further settlement and development of large regions of country, but the abandonment, in great measure, at least, of what has already been accomplished."

While it is true that these remarks refer to the United States as a nation, they necessarily apply in full force to Colorado and other States similarly situated, unless they have constitutionally surrendered their sovereignty to such an extent as renders them powerless to resist encroachments on their domain, which will deny to their inhabitants the use of things which nature has supplied them, entirely within their own territory, and not only arrest the further settlement and development of large portions of their area,

but also involve the abandonment of what has already been accomplished.

That is the doctrine for which we stand, and counsel for the Government have not pointed out to us the time and place, when and where, this right was surrendered by the State of Colorado and the other States to the United States Government, and yet they contend for Federal control and disregard of State lines. I called upon them in my original brief to show us where this new idea of control was found, and the only response I got was that they knew of nothing in the Constitution of the United States which would prevent the court from applying their doctrine. We do not look to the Constitution for prohibitions upon the power and authority of this court; we look there for authority for it to act in a certain direction, and when we do not find it there in express words or by necessary implication, it does not exist.

Now, I will admit that in the State control doctrine there will be occasionally some inequity. There have been a number of cases decided which arose close to the dividing line between two States where the conditions, being of recent origin, were easily adjusted, mere neighborhood affairs, in which the State line has been disregarded. But let me put this case—and it is but an illustration of cases which actually exist: Suppose that A, fifteen years ago, went into the Arkansas valley in Kansas and took up land under the Government laws. He sees water running in the Arkansas river and takes out a ditch to water his land. The very next day, 200 miles above him, and in Colorado, B takes up land, sees water running in the river, and takes out his ditch. Now, when A took out his ditch he knew, from the history of the country, that civilization was moving westward, that above him were thousands of acres of arid land upon which men had a right to settle and take out water, and he never for a moment considered, probably, that there might be even prior rights then in existence above him. When B went to take

out his, what did he do? He probably went to the records of the State of Colorado to see whether there was any free water in the stream, and finding there was, he filed his application under the laws of Colorado and took out his water.

Now, today a contest comes up. A in Kansas says, "I want B's ditch in Colorado, 200 miles above me, shut down," and when the case comes on for trial it appears that in point of time A is one day ahead of B, and that is all he has in the way of priority. Now, will the court say to B, "You shall close down your ditch," without knowing whether the water so released into the river will ever reach the headgate of A? Will not the court inquire into the facts and conditions, and finding that since the time A and B took out their ditches there have been a hundred more taken out in Colorado below B and above A, and that in order to assure A his right in point of time to this water, it must close every ditch between him and B, and not even then know that the water will get down to him? So if A brings his suit in court to enforce his rights against B he must make these hundred ditch owners parties defendant and have his and their rights adjudicated. Now, will any individual ditch owner down in Kansas ever do that? Is not that a case of inequity to A, which he must stand in order that the greater number may receive benefit of the doctrine for which we contend? Those instances are few, indeed, where a man will go to the expense of a suit of that kind, so that the doctrine that State lines should be disregarded in the appropriation of water, would injure a multitude and afford relief to very few people. The people below, who are suffering most by appropriations in the upper State, will continue to suffer, because they are so far below the line that they cannot afford the expense necessary to have their rights determined, and I doubt very much if, in the case I have presented, the court would award to A his priority and shut down all the ditches above him.

The Government, in its brief, concedes that "Each State,

however, is sovereign to the extent that it may adopt any law necessary to the development of its resources and for the protection of its citizens in their personal and property rights." Now, I do not claim that any State may wantonly or wastefully appropriate the water. I limit my contention to the single statement that when it is for the welfare and necessity of its citizens everything else must bow to that.

Mr. Justice WHITE: Now, if you say that, do you not admit a qualification to the doctrine which you announce? The moment that you say that a State may do that, provided it does it for a particular purpose, and not if it does it for another, then you admit the adverse authority somewhere?

Mr. BEAMAN: No, sir; I think not.

Mr. Justice WHITE: Then you do not make the qualification? Because if you say there is a qualification and yet there is no human power that can consider that qualification or enforce it—war cannot do it, because the States have renounced the right to war. No government can do it. Then you make a qualification, and in the same breath you say that qualification has no significance whatever, and cannot be enforced or recognized by anything on the face of the earth. That is not a qualification.

Mr. BEAMAN: It may be that the criticism of your Honor is just, but I was endeavoring to relieve the State control doctrine of its inequitable phase as far as I could. It may be that if the doctrine is sound it goes to that extent, but if one State should wantonly do something of that kind, wastefully and unnecessarily—I will say wantonly, and stick to that—it may be that under some clause of the Federal Constitution relief might be afforded, but that question I have not investigated, because, as I say, no arid State has ever made that claim or ever will, and it is enough to decide now that if the necessities of its citizens require the use of the water, then it may use it.

Now, the doctrine as announced by the Government in

their brief concedes the whole case, as we claim, for State control, unless by implication or directly these States have surrendered that right, and they cannot, in my judgment, find anywhere where that has been done. Congress is committed irrevocably to State control by the strongest language it can use, and this court has no power to declare a new policy for Congress. We look to Congress for the indication or declaration of the policy of this Government—or, at least, we used to—and I think we shall probably continue to do so.

Mr. Justice WHITE: Does not your argument as to Congress and the legislation of Congress conflict with your argument as to power? If there is no power of the Federal Government upon the subject, upon what basis do you refer to the legislation of Congress?

Mr. BEAMAN: As a recognition of the fact of State control.

Mr. Justice WHITE: Can Congress recognize a thing which it has not power to deal with, as to which, under the Constitution, it is not concerned in any way, and as to which no Federal power can address itself directly or indirectly? Congress cannot recognize what it cannot see, and if it has no power to see it, how can it recognize it? Congress' vision cannot extend beyond its constitutional power. Beyond its constitutional power it is blind, and you say there is no power whatever, and in the next breath you hold this ought to be determined by acts of Congress. If the acts of Congress are efficacious for some purposes, how shall we limit them?

Mr. BEAMAN: I made that remark just now especially with reference to the position of the attorneys for the United States, who claim that the present policy of the Government, as contended for by them, is a new policy, beginning with the Reclamation act, and I take it that Congress has a right, of course, to declare the policy of the Government, and I contend that it has so long recognized the power in the States that it cannot now change its policy and dispute that power. Nor has it, in fact, undertaken to do so. And indeed I do

not think it is necessary that it should. I think the Reclamation act will work out its greatest good under and by virtue of State control; that there cannot be joint control. That is impossible. There is no Federal control, and there cannot be, because, as I say, Congress is irrevocably committed to the contrary. And while it may be that Congress has no power to go outside and recognize something which it is powerless to change, still it has done it. But so far as it is within the power of Congress to thus recognize existing laws and indicate a policy, we have it. What it may be worth is another thing. I myself do not think it in any way strengthens the laws of the States, but it shows the view that has been taken by Congress with reference to the legal rights of the States in the matter, and indicates in unequivocal terms a policy in respect to these waters which neither counsel nor courts have power to change.

It may be that in the somewhat lengthy colloquy between Justice White and myself a few moments ago, as to the extent to which a State may go in regard to control of its waters, in which it was suggested that my contention to be sound would admit of no qualification or exception, I may not have made myself clear.

Mr. Justice WHITE: Oh, no; I expressed no opinion. I merely inquired for information as to your position.

Mr. BEAMAN: My understanding of the doctrine of State control of its waters is that every arid State has the sovereign right to appropriate all the waters within its boundaries, if such appropriation is essential to the prosperity and existence of its people. I am willing, however, to concede that it was, and is, implied in the Federal compact that no State may wantonly inflict an injury upon a sister State, and that from such an injury this court may have power to relieve. Upon this rock I stand, and I do not believe that this qualification in any way affects the soundness of the doctrine I contend for.

I have exceeded somewhat the time I was allowed, and will close. I thank the court for its indulgence and attention.

ORAL ARGUMENT OF MR. A. C. CAMPBELL FOR INTERVENOR.

May it please the court, in presenting this case on behalf of the Government I will address myself to the following questions: First, the reason for intervening; second, the jurisdiction of the court to entertain the action; third, the navigable capacity of the Arkansas river; fourth, the effect the use of these waters for irrigation purposes in Colorado and Kansas has had upon its navigable capacity and upon riparian rights in Kansas; fifth, the necessity for the reclamation of the public lands; sixth, the importance of the use of the waters of the streams in the arid region for irrigation purposes as compared with the importance of their preservation for navigation purposes; seventh, how a decision may affect the sale and reclamation of the public arid lands. These are the questions that will be discussed by me.

In discussing these questions I will endeavor to maintain that the evidence submitted establishes the following propositions of fact:

1. That the Government is vitally interested in the result of the suit.

2. That the river never was navigable above Fort Gibson in the Indian Territory.

3. That the use of its waters for irrigation purposes has not interfered with its navigable capacity.

4. That the use of the waters of the streams in the arid region for irrigation purposes is of paramount importance to their preservation for navigation purposes.

5. That the public arid lands can only be reclaimed and the policy of the Government with respect thereto be carried

out by the recognition of the rule of the appropriation and use of the waters of all streams in the arid region for irrigation purposes.

6. That but one rule in regard to water is practicable of enforcement on an interstate stream.

The propositions of law for which I will contend are:

1. That the State of Kansas does not own the bed of the river in that State. They allege that in their brief as one of the grounds of the jurisdiction of the court. We deny it.

2. That Congress has the power to dedicate to irrigation purposes the waters of the streams in the arid region which, uniting below, go to make up navigable rivers in the humid belt, and has exercised this power.

3. That a State has not the absolute control over the waters of an interstate stream while the same are within its borders.

4. That the common-law doctrine of riparian rights does not govern the waters of the river west of the 99th meridian.

5. That this court has the power, by decree, to declare what rule shall hereafter govern its waters in both States west of the 99th meridian.

6. That this rule should be one capable of enforcement, uniform in its operation, and the application of which will promote the general welfare.

7. That the appropriation and use of the waters of the river for irrigation purposes west of the 99th meridian, subject to the rule that priority in time determines priority of right, irrespective of State lines, does not destroy or impair any rights in Kansas such as are protected or recognized by the Federal Constitution.

In presenting the case, if your Honors please, I will assume, as shown by the testimony of the Government's witnesses, that the so-called underflow is percolating water and that its origin is rainfall.

Now, if your Honors please, we come to the first question—the reasons for intervening. The main contention of the State of Kansas, as seen in its original and amended bills of complaint, is that the common-law doctrine of riparian rights governs the waters of the Arkansas river throughout the State of Colorado and throughout the State of Kansas. You have just heard from counsel for the Colorado Fuel and Iron Company as to one of the contentions of that State, namely, that the State of Colorado, in its sovereign capacity, owns and controls the waters of said stream while they are within that State. The underlying motive, then, which inspired the officers of the Department of Justice to intervene in this case was based upon the belief that should either of these contentions be sustained irreparable damage would be caused to the nation at large and the policy of the Government in respect to its arid land would be jeopardized, if not entirely defeated. The evidence since submitted, instead of weakening, has strengthened and intensified this belief. As the counsel for the Government view and construe the briefs filed on the part of the State of Kansas, counsel for complainant do not abandon the contention set up in their original bill. The concluding sentence of their first brief on the merits is: "To that common law, the essence and sublimation of Anglo-Saxon law giving for twenty generations, we here appeal, and upon its well-settled principles we rest our cause." In their reply brief they say: "We repeat our assertions in the former brief, and we rest our case upon that common law, pure and undefiled." Now, while the State of Colorado does not, in their original brief, set up any claim, that is, they do not discuss this claim of State right to this water, yet in their reply brief they do invoke it as a defense to the amended bill, and you have heard from the Colorado Fuel and Iron Com-

pany in respect to that matter. Therefore, if your Honors please, as counsel for the Government now view the attitude of the respective parties to this cause, the plaintiff contends that the strict common-law doctrine of riparian rights governs the waters of this stream throughout both States, while the defendants urge that while those waters are within that State they belong absolutely to it, with the correlative right to dispose of them to such persons and for such purposes as it sees fit.

The Government insists that neither of these contentions is tenable and that public policy and the necessities of an advancing civilization demand a rule more in harmony with the spirit of modern development and one under which the arid lands of the United States can be made salable, habitable and productive.

Now, a word, if your Honors please, as to the arid lands. As commonly understood the arid region of the United States is that part where the precipitation of moisture is insufficient to produce the ordinary commercial crops without the artifical application of water. In other words, it is that part where the rainfall does not exceed twenty inches annually. Generally speaking, it begins about the 99th meridian and extends westward to the Pacific slope, with the exception of western Oregon, western Washington and a part of California. It embraces between two-fifths and one-half of the entire area of the United States. It includes practically all of Colorado, Wyoming, Montana, Idaho, Utah, Nevada, Arizona and New Mexico, the greater part of Washington, Oregon and California, and about one-third of North Dakota, South Dakota, Nebraska, Kansas and Oklahoma, and a part of Texas. But inasmuch as there is no public land in the state of Texas it can be eliminated from discussion here.

If your Honors please, within the arid region the lands in their natural state are fit only for grazing purposes. On an average they are not worth the Government price of $1.25 an acre. A thousand acres will scarcely support one person.

And it has been estimated that one square mile, or 640 acres, will scarcely raise natural grass sufficient to provide for five head of neat cattle. By the application of the waters of streams to these lands, in other words by reclaiming them by irrigation, their value increases from twenty to a thousand-fold, depending upon their locality; and, when reclaimed, instead of being worth but $1.25 per acre they will be worth from $20 to $500 per acre, and instead of its taking a thousand acres to support one person less than forty acres will support a family of five, and in some localities where fruits and semi-tropical products can be successfully cultivated, one acre will directly support two persons.

During the quarter century preceding the year 1903 there was reclaimed within the arid region almost ten million acres of land at a cost of over two hundred million dollars—an area greater in extent than all the cultivated lands within the New England States. Of the land that has been so reclaimed prior to that time two million acres are within the State of Colorado and 300,000 acres or more of them are within the water-shed of the Arkansas river in Colorado, while 30,000 acres are within the State of Kansas within that water shed. These lands today, with the improvements thereon, are worth more than five hundred millions of dollars. They support, directly and indirectly, over five millions of persons, or more of a population than the thirteen original colonies had at the time of the outbreak of the Revolution. In 1902 these lands produced crops valued at more than one hundred millions of dollars. In 1904—to get some idea of what this case and what these arid lands mean when they are irrigated—in 1904 the irrigated lands of the State of Colorado alone produced crops valued at forty millions of dollars and over, two-thirds the value of the entire agricultural crop produced in Oklahoma in the year 1905. Since 1903 the amount of capital which has been invested in enterprises looking to and depending upon the irrigation of the

arid lands equals, if it does not exceed, the amount previously expended. Taking Colorado alone, within this last six years, the amount of capital invested in such enterprises in that State is in the neighborhood of fifteen to twenty millions of dollars; and in Kansas within this last year, if your Honors please, in the vicinity of Garden City, on this river, upwards of one million dollars has been expended in such enterprises, and over five hundred thousand dollars will be expended during this next year—two hundred and fifty thousand dollars of it by the Government of the United States.

It is a well known fact that outside of the arid region there is no more land subject to sale and settlement under the general land laws. Within this region the Government practically owns all of the unreclaimed and undeveloped land. Of course there is a great deal of it that belongs to the railroad companies under their grants. It has been estimated by competent experts that there can yet be reclaimed by the application to these lands of the waters of natural streams, flood and subterranean waters, from sixty to one hundred and fifty million acres, an area greater in extent than all the cultivated and improved lands in the New England States, New York and Indiana combined. These lands, when reclaimed by irrigation, instead of being worth but $1.25 per acre, as I said before, will be worth from $20 to $500 an acre, and in some localities they will be worth $1,000 an acre. They will be capable of sustaining a population of not less than fifty millions of people, and some of the experts put it as high as one hundred millions of additional population. Counsel who opened this case for Kansas intimated that inasmuch as we had no grounds here upon the question of navigation we had no interest in this suit. I would like to know, if your Honors please, in view of our increasing population of over two millions a year, of the necessity of providing homes for all and of preserving homes

and property already created, whether we have not an interest in this suit, in view of the fact that the decision may have the effect of preventing or retarding the reclamation of the arid lands or of destroying homes and property already existing.

If your Honors please, just one word as to the jurisdiction of the court. As I said before, one of the grounds upon which Kansas claims this court has jurisdiction is that the State owns the bed of the Arkansas river within that State. Now, this is a meandered non-navigable stream. The Government does not deny that the court has jurisdiction, but it does deny that it has jurisdiction upon that particular ground. This question, if your Honors please, has been thoroughly discussed in our brief, and I do not care to discuss it here, but merely to call attention to the growing importance of this question. It has never yet been passed upon by this court, that is, the ownership of the bed of a non-navigable river between meandered lines. The last decision of this court in respect to the question is that in the case of Whitaker *vs.* McBride (197 U. S.), which involved an island of twenty-six acres in extent in the North Platte river in the State of Nebraska, and your Honors, in affirming the decision of the lower court, refused to approve the interpretation made by that court upon the doctrine laid down in Hardin *vs.* Jordan.

The next question I will take up, if your Honors please, is the navigable capacity of the Arkansas river. In view of the evidence upon this point, it is somewhat surprising to counsel for the Government that the learned counsel for Kansas would seriously contend in their briefs and before this court that that river ever was navigable in the State of Kansas or capable of being made so. What are navigable waters has been passed upon many times by this court, notably in the Daniel Bell case, 10 Wall., the Montello case, 20 Wall., and Leavy *vs.* United States, 177 U. S. As there

defined, if I can recall the definition, they are such waters as commerce of a substantial and permanent character may be conducted thereon by the customary mode of trade and travel on waters. Within this definition, if your Honors please, the Arkansas river, from its source to its mouth, is not navigable at the present time; for according to the undisputed evidence in the case, in its natural condition it is incapable of carrying the vessels or boats now customarily used upon waters. The evidence of David Chapman, who had navigated this river as a boatman for over forty years, is important upon this question and should be taken as conclusive in connection with the other evidence in the case. I think it was on cross-examination by counsel for Kansas that he said: "I do not believe there is money enough in the United States Treasury to make this river navigable the year round under any conditions." Now, the evidence is, if your Honors please, that between its mouth and Little Rock this river has been navigable for light craft for about six months in the year only, since 1855. Between Little Rock and Fort Gibson very small boats have navigated the river in high water periods for about four months in the year. Above Fort Gibson this river never was navigable, as that term is understood and defined in the decisions just referred to. And if we are to take the testimony of experienced boatmen who have navigated this river for over fifty years, the river never was navigable for any purpose above Fort Gibson and never was capable of being made navigable. The very first witness placed upon the stand was M. M. Murdock, of Wichita, Kansas. He had been on this river since 1860 and had lived at Wichita since 1872. You heard Mr. Dawson yesterday refer to his testimony, and it is unnecessary for me to repeat it, except for this remark: Mr. Murdock failed to tell us how long even the copper lining, which he says was suggested by General Grant, would resist the scouring sands of the river.

Now, if your Honors please, I come to the next question. Has irrigation in Colorado and in Kansas interfered with the navigable capacity of this river? We claim that the evidence is conclusive that irrigation has not interfered with the navigable capacity of the river. Counsel for Kansas in opening day before yesterday said that the river had been navigable for 350 miles above where it is navigable at the present time before water was taken out of the stream in Colorado and Kansas for irrigation purposes. Now let us see. The Government placed upon the stand three boatmen, Drake, Houston and Chapman. Each of them testified that they had navigated this river for almost half a century, and each said that the volume of water in that river had not been decreased to any appreciable extent during the last few years as compared with the former years. Major Sibert and P. R. Van Frank, two Government engineers in charge of the improvement of the river at Little Rock, were placed upon the stand. They had made an investigation by direction of the Secretary of War to ascertain whether the diversion of the waters of the river above for irrigation purposes had interfered with navigation below, and they both said that from observation, from interviewing old residents along the river, from the study of historical records and documents, they were unable to establish the fact that the river, at its low water discharge, had been decreased in consequence of irrigation in Colorado or Kansas. And Mr. Van Frank said that should you take all of the water of the river out above Wichita at its ordinary stage it would not be noticed at Little Rock, and that if you took all of the water out of the river at its low water stage at Wichita the effect would not be noticed at Fort Gibson. In the face of such testimony, some of it coming from the mouths of their own witnesses, counsel for Kansas deliberately write into both of their briefs and seriously tell this court that navigation has been interfered with by the diversion of this water above for irrigation purposes. But, if your Honors please, suppose it has. As I will contend here-

after, it is to the interest of the Government, the interest of the nation at large, that these waters should be devoted, especially in the upper reaches thereof, to irrigation purposes rather than to be preserved for navigation purposes.

The next question I shall take up is the necessity for the reclamation of the arid lands. Counsel for complainant in their original brief say that the public interest in this case has broadened and deepened as its extent and far reaching nature have become known. They may have truthfully added that that interest is not confined to the United States. The case has attracted attention in Canada and in Egypt. Its outcome is watched with peculiar interest by the inhabitants of Australia, where a similar question is pending before their parliament with reference to the waters of the river Murray, and the decision in this case may have an important bearing upon the decision of parliament in that case. Counsel, however, have failed to state or even suggest the reason for this deepening and broadening interest. Many of these reasons we have undertaken to state in our brief. Some of them were very forcibly expressed by Mr. James J. Hill, president of the Great Northern Railroad Company, in a remarkable address delivered by him at Minneapolis on the 3d of October last, an address which not only attracted national attention but the attention of publicists and statesmen throughout the world, an address which the New York *Herald* said was the most important contribution to American economic science for many years. Now, a part of what he said I will ask the indulgence of the court to read as showing the necessity for the reclamation of the arid lands in the largest measure possible:

> "Within twenty years we must house and employ in some fashion fifty millions of additional population, and by the middle of this century there will be approximately two and a half times as many people in the United States as there are today. No nation in history was ever confronted with a sterner question than this certain prospect sets before us. What are we

to do with our brothers whose keepers we are? How are we to provide our children with shelter and their daily bread? Our arable lands have almost disappeared.

"The single advance along practical lines made by public authorities within the last quarter of a century is the reclamation law. Initiated and inspired and paid for by a few railroad companies it provides for a real addition to the source of the food supply and an opportunity for employment. But it is only a light breeze blowing in the face of a cyclone. If every project contemplated as feasible were executed and if all were completed by the rub of a magic lamp, some sixty million acres would be added to the arable public domain. And if only forty acres of these were assigned to each family, it would supply the needs of the actual addition to population by natural increase and by immigration for less than three years. * * *

"Failing to understand the needs of the hour or to appreciate the moral to which they point, what fortune must await us. Within twenty years 125,000,000 of people and before the middle of the century over 200,000,000 people must find room and food and employment within the United States. Where are they to live? What are they to do?"

It is a noticeable coincidence that on the very day on which Mr. Hill was sounding this note of warning which all should heed, thirteen hundred delegates, representing every section of the Union, met at Boise City, Idaho, in order to express the views and suggest methods by which the public arable lands could be brought under irrigation in the swiftest possible time. In other words, these thirteen hundred delegates met there for the purpose of endeavoring to solve the greatest economic problem before the American people. Why, as showing the interest that is taken in this question, if your Honors please, while these delegates were in session they received advice and suggestions from President Roosevelt and were addressed by Vice-President Fairbanks and by United States Senators, Congressmen, and governors; but that is not

all. One of the delegates who took part in that convention, and was on the most important committee appointed by its chairman, is the learned counsel for Kansas who opened this case.

As the necessity for the irrigation of the arid lands becomes more acute the importance of the use of water for navigation decreases, and as railroads multiply the importance of the preservation of the waters for navigation purposes grows less. As illustrative of this it is only necessary to refer to a few witnesses. Among them is Senator Hansbrough, of North Dakota, chairman of the Senate Committee on Public Lands. He testified in this case, and among other things said that it would pay the Government of the United States to buy up and destroy all the boats upon the Missouri river in North Dakota, so that the waters of that river could be devoted to irrigation purposes, as irrigation was paramount to navigation in that section. Now, the other witnesses, if your Honors please, that were called in this case, experts, persons acquainted with the situation, each and all testified that Senator Hansbrough's statement in regard to the Missouri river applied with equal force to every stream in the arid region west of the 99th meridian. But now let us come to the Arkansas river and make a little comparison there. The average normal flow of the Arkansas river where it emerges from the mountains in Colorado, as has been stated, is about 750 cubic feet per second of time, a volume which, flowing for one year, will cover 550,000 acres a foot deep. Flowing for one day it will cover about 1,500 acres a foot deep. Now, for the year ending June 1, 1904, only fifteen boats of light craft navigated the entire river in Arkansas and in the Indian Territory. The total tonnage was 93,000; the total value of all that tonnage was about two million dollars. Now, in that same year, may it please the court, an acre-foot of water in Colorado produced crops valued at $9.17. At this rate 750 cubic feet of water, which was the normal flow at Cañon City, in Colorado, was worth for irriga-

tion purposes that year over five million dollars, or double the value of all the merchandise carried on the river by navigation. These figures, if your Honors please, are confirmed and corroborated by crop reports for 1902, which show that in the Arkansas valley, in Colorado, from irrigated lands there was produced crops valued at six millions of dollars, or three times the total value of all the tonnage carried upon the Arkansas river from its course to where navigation ended.

Mr. Justice BREWER: If there was a single settler that owned a quarter section bordering on the Arkansas river, and had the right recognized at common law as the riparian right, and the interest and welfare of all that country out there, of all the States, required that that should be taken away from him, would the court be justified in taking it away unless he received proper compensation?

Mr. CAMPBELL: I would say no, if your Honor pleases; but if that is an indication of your Honor's view on the subject, that is where your Honor and I differ. My position is that riparian rights below cannot be affected by irrigation above. But I will come to that a little later on.

Mr. Justice BREWER: That the State of Kansas has no legal right to the flow of the water?

Mr. CAMPBELL: I will come to that point in due course. But in answer to your Honor's question, I will say that west of the 99th meridian the comon law never did apply.

Mr. Justice HARLAN: Why do you say west of the 99th meridian?

Mr. CAMPBELL: Because east of that point crops can be raised by natural precipitation. West of that crops cannot be raised except by the artificial application of water.

Mr. Justice BREWER: The law changes, does it, at that meridian?

Mr. CAMPBELL: It never changed, no, sir. It had never been there to change.

Now, if your Honors please, I come to another question

in this case, and that is how the decision in this case may affect the sale and reclamation of the public arid lands.

Mr. Justice WHITE: You constantly talk about the public lands. When you speak of the public arid lands, are you deducing from the fact that they are public lands, a Government right, or power of Congress? Do you suppose if there is a hundred acres of public land in a State, the existence of that public land in the State invests Congress as a Government with the power to destroy the law of the State because it owns land in the State which an individual would not have?

Mr. CAMPBELL: I take no such position, if your Honor pleases, at all.

Mr. Justice WHITE: Then what have the public arid lands to do with it when you come to the——

Mr. CAMPBELL: As to the question indicated by your Honor yesterday, that this court could establish a rule——

Mr. Justice WHITE: I never indicated any such position.

Mr. CAMPBELL: Well, I beg your Honor's pardon. That was the construction I got from the question put to counsel.

Mr. Justice WHITE: No, I asked the counsel if he thought this court was a legislature.

Mr. CAMPBELL: Well, we do not think so, but I was coming to the point your Honor indicated yesterday. Now, I beg your Honor's pardon, but I do not know as I just gather your Honor's meaning in this question.

Mr. Justice WHITE: Well, counsel was talking about reasonable use, and I asked him where he derived the power of this court as an amicable compounder, to act as a parliament or a congress or to legislate.

Mr. CAMPBELL: Well, no, it was the one just put to me now.

Mr. Justice WHITE: I have not put any question to you now. You are talking about arid lands and arid lands and public lands. Now, I want to ask you what have arid and public lands to do with this case.

Mr. CAMPBELL: Well, I think I will show before I get through, if your Honor pleases.

Mr. Justice WHITE: As a question of governmental power, I mean.

Mr. CAMPBELL: I think that, in coming to a decision in this case, your Honors can take into consideration the public policy of the Government with respect to its arid lands or with respect to any other question.

Mr. Justice WHITE: Whose public policy?

Mr. CAMPBELL: The public policy of the Government as indicated in the legislation of Congress and the decisions of this court.

Mr. Justice WHITE: Well, suppose that public policy interferes with the public policy established by the State?

Mr. CAMPBELL: In that case, if your Honor pleases, I maintain that the public policy established by a State cannot apply over the waters of an interstate stream.

Mr. Justice WHITE: Well, that is another thing. Then public lands have nothing to do with this case. It is a question of want of power in the State to legislate over interstate streams. It does not depend upon the public lands. That same power would exist whether there was an acre or one inch of public lands. So you constantly talk about public lands and deduce nothing from it.

Mr. CAMPBELL: Well, I hope to later on.

Mr. Justice WHITE: Well, I do not see that you do. But proceed.

Mr. Justice DAY: Are you going to take the position as to what the common law is after you get beyond this margin you speak of?

Mr. CAMPBELL: Yes, if your Honor pleases. I take the position now, as your Honor has put that question here—I was going to take it up later on—that the common law exists only where its principles are applicable.

Mr. Justice HOLMES: May I suggest that that possibly might be stated in a somewhat different way, that is, that the

precise form of the rule that the common law had adopted with reference to one state of things is not necessarily the same form of rule with reference to a different state of things, and yet the principle at the bottom of both forms of rule may be one.

Mr. CAMPBELL: That may be, if your Honor pleases, but our position, I will say, with respect to the common law of riparian rights, is that it never did exist, even in England, where it was not applicable, and that it never did exist in this country in the arid region, because it was inapplicable there.

Mr. Justice WHITE: Now, I will put this question to you, because I thought perhaps you laid stress upon that, which, in one view of this case, might destroy every argument you are making. That is why I put this question. There was a case argued in this court some years ago known as the Bridal Veil case. There a man had bought a piece of public land in Colorado and the right of beneficial use in Colorado interfered with the riparian rights. He came into this court and he said "This is public land. The Government of the United States has power of legislation over its public lands under the clause of the Constitution to govern, etc. At the time the Government of the United States gave me this land beneficial use did not exist in Colorado, and therefore when the Government gave it to me it gave it to me with its common law rights, and, getting those rights, in virtue of the authority possessed by the Government over its public lands, any irrigation law of any State whatever, until Congress expressed itself to the contrary, was void." That was the Bridal Veil case. That was argued here but not determined. Now, you are constantly laying stress upon public lands, and power predicated upon that it seems to me would be deducing a consequence which was argued in the other case, which would destroy every proposition argued in this case if it were conceded.

Mr. CAMPBELL: Now, if your Honor pleases, I know some-

thing about that case. As I understand it, this court did not pass upon the question.

Mr. Justice WHITE: No, it was discontinued and settled.

Mr. CAMPBELL: It was sent back to Colorado.

Mr. Justice WHITE: No, it was settled.

Mr. CAMPBELL: Yes. That question was never raised nor decided. I think it is quoted in "Farnham on Waters," that very case. But the supreme court of Colorado had held at that time that the common law with respect to riparian rights never did exist in Colorado. Now, if this court should have sustained the contention made by that party, as your Honor has indicated, they would have to set aside the decision of the supreme court of the State of Colorado.

Mr. Justice WHITE: Yes, and the argument was made that because it was public land of the United States we would have that to do. But I did not want to commit you to that proposition impliedly by your argument on public lands.

Mr. Solicitor General HOYT: May it please the court, if Mr. Campbell will excuse me for a moment, I think he has not yet understood the purport of the question. I understand that the references in our brief and argument to the public lands are directed to a conception of the vastness and extent of the public domain and therefore to its great material interest in this controversy.

Mr. CAMPBELL: Now, I do not want, if your Honors please, to dwell upon this subject of the necessity for the reclamation of the arid lands, or what might be the effect of certain decisions of this court if your Honors do not wish to hear any argument upon that proposition. I do not want to take up the time of the court.

Mr. Justice WHITE: The purpose of my question was not to interrupt you. Of course this is a very difficult and great question, and some difficulties are presented, and I was stating them to you with the object of letting you know there might be a snag in the river somewhere and that it might be well to prepare for it.

Mr. Justice DAY: Do you say that the common law does not exist up there? Has a new common-law right grown up in those lands west of the 99th meridian?

Mr. CAMPBELL: An entirely different doctrine from the common-law right.

Mr. Justice DAY: Well, is it established so that you would say it is the common law of that country?

Mr. CAMPBELL: I take it so, if your Honor pleases, in the arid region.

Mr. Justice DAY: What is it?

Mr. CAMPBELL: It is that the waters of streams may be appropriated and used for irrigation purposes within their watersheds.

Mr. Justice DAY: And that the first comer, so to speak, may use it all?

Mr. CAMPBELL: Yes, sir; if he is prior in appropriation and use.

Mr. Justice WHITE: Well, that is not the law of Colorado?

Mr. CAMPBELL: That is the law of Colorado.

Mr. Justice WHITE: No, it is what they call beneficial use. A man might come along and take all of the water.

Mr. CAMPBELL: Oh, you mean Colorado contends that she has the right to all of the water. We do not agree with that contention.

Mr. Justice WHITE: Even by use by an individual. You might come along and take all the water for manufacturing purposes in Colorado and some man might come along below and want it for domestic purposes. He could take it from you, because in Colorado by the constitution and statutes the uses of water are graded or classified.

Mr. Justice DAY: Now, on that point, what has the Federal Government to do in this matter? What power has it to act in view of your concession as to the law of riparian proprietorship along this river?

Mr. CAMPBELL: I was leading up to that. I think I can

make myself clear that this court has a right to adopt a rule which will benefit the nation at large and promote the general welfare. That was the proposition I read in starting out to argue this case.

Mr. Justice DAY: You are going to develop it later, then?

Mr. CAMPBELL: Yes, if your Honor pleases.

Now, another question which I started out to take up was the question as to how the decision in the case might affect the reclamation and sale of the arid lands. Now, we say that the reclamation and sale of the arid lands of the United States would be prevented by the approval of either of the following propositions—first, that in the arid region the use of the waters of streams for navigation purposes is paramount to their use for irrigation purposes; second, that a State has sovereign control over the waters of an interstate stream within its borders; third, that the strict common-law doctrine of riparian rights governs the waters of an interstate stream situated entirely or partly within the arid region; and fourth, that the so-called modified or California doctrine governs the waters of such streams.

Mr. Chief Justice FULLER: What is that California doctrine?

Mr. CAMPBELL: Well, the California doctrine is hard to understand and difficult to explain. I will come to it as I develop my argument, and I will show your Honors what I understand the California doctrine to mean. I have arranged these things in this order because counsel for the State of Kansas took them up in that way and I am now undertaking to answer what is in their brief with respect to these matters.

Now, in regard to this first proposition, if your Honors please, that the waters of the streams in the arid region are more important for irrigation purposes than for navigation purposes. Counsel for the State of Kansas in their brief say that it is doubtful whether Congress can destroy the navi-

gability of an interstate stream, and more than doubtful whether it can destroy it for irrigation purposes. This court held, however, in South Carolina *vs.* Georgia (93 U. S.), that Congress has the power to provide by law for the obstruction of a navigable stream. It also intimated in that and other decisions that Congress may provide by law for the destruction of an interstate stream as a navigable stream between the States if the public welfare demanded the exercise of the power. If Congress has this latter power, then we claim as a general proposition that Congress may dedicate to irrigation purposes the waters of streams in the arid region even though the use of the waters for irrigation purposes destroys the navigability of the stream below. We claim that Congress has done this very thing, that it has dedicated to irrigation purposes the waters of the streams in the arid region, even though the use of those waters destroys the navigability of the stream below. And we refer to the act of 1866, the Desert Act of 1877, the so-called Carey Act of 1894, and the Reclamation Act of 1902.

Now, if your Honors please, in regard to the second proposition, that a State has sovereign and absolute control over the waters of an interstate stream while the same are within its borders. The evidence all goes to show that if such doctrine were enforced in an upper State all agricultural development in the lower State depending on the waters of that river would be absolutely destroyed and the Reclamation Act could not be enforced in the lower State within the water shed of the river. But aside from the effects, if your Honors please, of such a doctrine, we claim that it is unsound, as a simple illustration will show. The Milk river is a non-navigable stream. It is partly in the State of Montana and partly in the Dominion of Canada. Citizens of Canada and Montana are and have been using the waters of that stream for irrigation purposes for a number of years. As usual in matters of this kind, a dispute has arisen between them as to

the proper division and distribution of its waters. Now, I take it that it will not be denied by counsel for Colorado, although it may be by counsel for The Colorado Fuel and Iron Company, that the United States Government and the British Government could enter into a treaty with respect to the proper distribution and division of the waters of that stream for irrigation purposes or for any other purposes. That treaty, if and when concluded, becomes the supreme law of the land. The citizens of Montana would have no more right to violate its provisions than would the citizens of the Dominion of Canada. If we admit this there is no escape from the conclusion that a State does not have such sovereign control and power over the waters of an interstate stream as that the United States Government cannot interfere with it.

Mr. Justice WHITE: That is, correct an abuse, you mean?

Mr. CAMPBELL: Yes, if your Honor please. And I learn from the papers within the last few days that Mexico has just concluded and ratified the treaty between this country and that republic with respect to the waters of the Rio Grande, an international stream.

Mr. Justice WHITE: Let me put a question to you that is in line with your argument. The State has power to tax, has it not?

Mr. CAMPBELL: Yes, sir.

Mr. Justice WHITE: It is ample.

Mr. CAMPBELL: Yes, sir.

Mr. Justice WHITE: And it is complete. Suppose a tax—a State in dealing with taxation so makes her tax law that it in substance and effect taxes property and things beyond her borders. Would that be valid?

Mr. CAMPBELL: Not at all, sir.

Mr. Justice WHITE: Well, is the power of a State to control water any more complete and efficacious than her power to tax?

Mr. CAMPBELL: I should say not. I think that is in line

with my argument that the State would not have power over these waters when they pass beyond the borders of the State. However, if your Honors please, we have fully discussed this question in our brief and we think we have there shown the fallacy of the position taken by counsel for Colorado in their answer and the position assumed by counsel for The Colorado Fuel and Iron Company before this court.

Now, as to the third and fourth propositions. It is difficult to understand, if your Honors please, from the attitude of counsel for defendants, which of these two propositions they rely upon, that is, whether the strict common-law doctrine of riparian rights governs the waters of an interstate stream or the so-called modified or California doctrine of riparian rights govern.

Now, if your Honors please, to award any relief to the State of Kansas in this case it is necessary that the court shall approve one or the other of these propositions, either that the strict rule of the common-law governs the waters of this stream throughout its course in Kansas and Colorado, or that the so-called modified or California doctrine governs its waters. As I said before, it is difficult to determine upon which one of these two doctrines the State of Kansas relies. In their original bill counsel set forth as their theory that the strict common-law doctrine of riparian rights governs the waters of the entire stream. In their brief filed upon the demurrer of Colorado to its original bill they invoked the same doctrine; and in their oral argument before this court on that demurrer, as the stenographic reports show, they invoked the same doctrine. The amended bill is the same in theory as the original. In their original brief upon the merits they shift from one doctrine to another and back again so often that it is difficult to follow them. In their reply brief they say at one place—and mark the words, if your Honors please, because it goes direct to the question that some of your Honors have put to me—in their reply brief they say, and that was stated by the learned counsel who opened this

case for Kansas, that any doctrine but that of appropriation and use for beneficial purposes in Colorado of the waters of this stream while within the State of Colorado would be injurious to its citizens and ruinous to the Reclamation Act; yet in the same breath, in the same connection, they say that the common-law doctrine of riparian rights governs these waters in Kansas and that any use of the waters in Colorado for irrigation purposes must be subject to riparian rights in Kansas. Now, we say that that is not only inconsistent and illogical, but that it is untenable, for the reason that in respect to the waters of an interstate stream which flows through different States but one doctrine is capable of enforcement. The evidence in this case and the decisions of the courts establish these two propositions: (1.) That the doctrine of riparian rights, strict or modified, and the doctrine of appropriation are in conflict with each other and cannot exist on the same stream at the same time. (2) That the enforcement of the doctrine of riparian rights in the lower State absolutely destroys the doctrine of appropriation in the upper State. Now counsel for Kansas yesterday referred to the case of Anderson *vs.* Bassman. In that case there was a contest between appropriators of water in California under the so-called modified doctrine of riparian rights, and the appropriators of water in the State of Nevada under the doctrine of appropriation. And the court held there that these two doctrines could be enforced on the same stream at the same time. And why? Because the doctrine of riparian rights prevailed in the upper State and the doctrine of appropriation in the lower State, an entirely different proposition, if your Honors please, from that where the doctrine of appropriation is in the upper State and the doctrine of riparian rights is in the lower State.

Now I would like to call your Honors' attention just for a moment to pages 179 and 180 of the brief upon the proposition, that these two doctrines cannot exist at the same time upon the same stream.

The supreme court of the State of Utah, in Stowell *vs.* Johnson, says:

> "The appropriation of water for the purpose of irrigation is entirely and inevitably in conflict with the common-law doctrine of riparian proprietorship."

Mr. Works, in his publication entitled "Works on Irrigation"—and let me say that he is regarded as an eminent authority on this point—has written a treatise with respect to the irrigation laws of California, in which he says:

> "It must be conceded that the right of appropriation is inconsistent with and antagonistic to riparian rights. The two cannot exist together and participate in the benefits of the use of the waters of the same stream."

Mr. Elwood Mead says:

> "The doctrine of riparian rights and of prior appropriations are antagonistic. They cannot exist together. One places no limitation on the places where water can be used and the other places rigid limitations. The methods of acquiring titles to water and the whole methods of administration are entirely different. It is simply impossible for the two doctrines to operate together in the same drainage area."

Now, if your Honors please, assuming as I have a right to assume from the record that it is only practicable to apply but one general rule with respect to the waters of this stream, the question arises, Shall this rule be the doctrine of riparian rights, strict or modified, or shall it be the doctrine of prior appropriation and use? In order to understand this clearly, it will be necessary to understand the distinction between these two doctrines and it is very clearly and concisely stated by Professor Elwood Mead, head of the irrigation investigations of the Department of Agriculture:

> "Q. Now, please state in your own language, professor, what you regard as the distinction between the

doctrine of riparian rights and the doctrine of prior appropriation and application of water to beneficial use. A. The doctrine of riparian rights is a step in advance of the doctrine that regards water as a free gift of nature and that it belongs to everybody alike, and it differs from it in this, that it confers an aristocracy of privilege on the lands that abut the stream. It is a doctrine in which the owners of lands that abut the stream have the exclusive right to the flow of that stream past those lands, and it is attached to those lands, and in its original conception even those land owners could not divert and utilize that stream in such a way as to cause a material impairment in its amount. Now, the doctrine that is opposed to that is the doctrine that water, being one of the elements of nature, that is of incalculable importance and advantage to mankind, should be utilized to the greatest possible extent, and hence its diversion and use should be permitted irrespective of the place to which it is applied, whether it is on riparian lands or non-riparian lands, whether it is close to or remote from the stream; with this limitation on such diversion, that no diversion shall be permitted that would impair any existing right, that anyone who had used water beneficially must be protected in his right to continue that use. In that way, if a riparian land owner had used water he would be protected in his right to continue its use, just as any one who was a non-riparian user of water would be protected in its use. However, to carry that out involves an administration of water. You must treat water like a valuable property. You must have a record of rights and a determination of the order of priority of those rights in order to protect them, and that is the system that has been established throughout the arid region. While I believe that the water administration along the Arkansas river in Colorado is entire efficient, I believe that a higher duty will be obtained in time by better methods on the part of the farmers. My judgment also is that the future development of the arid region is dependent upon the doctrine of appropriation of waters and its application for beneficial use."

Now, let us take the strict doctrine of the riparian rights and undertake to apply it to the waters of this stream in Kansas. Under that doctrine a riparian owner in Kansas is entitled to have the flow come to him in its natural state in flow, quantity, and quality. Says the supreme court of Utah in Stowell *vs.* Johnson, if that rule had been recognized in the arid region, it would still be a desert. If evidence should be required to show that no agricultural development could have ever been made or is possible of continuing in the arid region by the application of any such doctrine as that, and that the reclamation act would be destroyed absolutely, the evidence in this case abundantly supplies it.

We come now to the modified or California doctrine of riparian rights. Counsel for Kansas say in their brief, and Mr. Loomis, who closed the case yesterday for Kansas, says that that doctrine might be made applicable to the entire waters of this stream in Colorado and in Kansas. If that is true, then there would be no objection to the application of this doctrine to the waters of that stream or other streams similarly situated.

Mr. Chief Justice FULLER: I wish you would state what you understand that doctrine to be.

Mr. CAMPBELL: That doctrine, as I have said, is hard to explain and difficult to understand. It means one thing in one case and another thing in another case, as an examination of the decisions of the courts will show. But as near as I can get at it——

Mr. Justice WHITE: You cannot get very near it, in my opinion. I have been over the cases.

Mr. CAMPBELL: Well, I say, as near as I can get at it, it allows the reasonable use of the waters of a living stream to irrigate riparian lands. Now, what is a reasonable use is a question of fact in each case. What are riparian lands is a question of law. And an examination of the cases will show that there has been as many irreconcilable decisions in regard to the law as there have been irreconcilable verdicts in

regard to the facts. Now, take it on the law, the supreme court of Nebraska, in Hathaway County *vs.* Crawford Co., said that riparian lands which could be irrigated by a reasonable use of the waters of a living stream did not extend beyond the first government forty acres. The supreme court of California held that such lands embraced all the lands within the water shed of the stream. Farnham on Waters endorses that view. And the supreme court of Kansas, in Clark *vs.* Allaman, quotes with approval the language used by Mr. Farnham in his work upon waters. Professor Elwood Mead, who has written a book entitled "Irrigation Institutions," says that it would require more than finite intelligence to determine what will ultimately be the rule of the waters of the streams in those States which have undertaken to follow the California doctrine. In a word, if your Honors please, its limit and extent cannot even be determined by the judicial process of inclusion and exclusion, because it invariably depends upon a question of fact determinable only by a jury. Now, it will not be denied, if your Honors please, that in respect to the waters of a stream within a State the rule should be uniform, stable, and certain. How much more important, then, is it that in respect to the waters of an interstate stream the rule which should govern those waters should be uniform throughout the entire stream; and, speaking for myself, if your Honors please, and not for anyone else in connection with the case, I heartily endorse the remark of a writer upon this very case when he said that it is not only important but imperative that the rule in regard to the waters of an interstate stream should be uniform in both States, because the constitutional rights of the State demand that every subject of controversy shall be determined by a general principle of law, so that like rights and duties may be attributed to each State. Now, the position of the Government, if your Honors please, in regard to this question is that neither the strict doctrine of riparian rights nor any rule which may be adduced from the decisions of those courts which

have approved the California doctrine are applicable to the waters of the Arkansas river west of the 99th meridian, and no such rule should be sanctioned by this court. Summarized, this contention is based upon the following propositions: First, that both rules rest upon common-law principles; second, that while the court may resort to common-law principles to determine a new question upon which there is no statute or settled law upon the subject, as you held in Bauch *vs.* Baltimore and Ohio Railroad Company, yet no rule based upon these principles should be enforced in any locality where the principles are inapplicable or where the rule, if enforced, would be harmful. It will not be denied by any impartial persons who may read the record in this case, that the doctrine of riparian rights, strict or modified, with respect to waters is inapplicable to conditions prevailing on the Arkansas river west of the 99th meridian, and if enforced in that locality the destructive effect would not only be appalling, but permanent.

A recess was then taken until 2.30 p. m.

Mr. CAMPBELL (continuing): If your Honors please, at the recess hour I had stated that the rule of the common law, either strict or modified, was inapplicable to the conditions prevailing along the Arkansas river west of the 99th meridian. Now, as to where the common law applies in this country, I will leave that to be discussed by counsel for Colorado, who will close this case. It is not necessary to take up the time of the court for several counsel to discuss that proposition. I will simply say now that the position of the Government with respect to that matter is that the common law only exists where the conditions are suitable to its existence.

Now, a word, if your Honors please, in respect to this question of water. Not only are the common-law principles with respect to the waters of streams inapplicable to conditions prevailing in the arid region, but as civilization advances and its population multiplies, this doctrine is found to

be inapplicable in many parts of the humid region. England, the home of the common law, has found it necessary to abolish these principles within certain parts of the island. Canada has a code of water laws antagonistic to these principles. In Australia certain of the provinces have found it necessary to abolish the common-law doctrine with respect to riparian rights. In Austria, in Germany, in Switzerland, and in Italy water is and for many years has been recognized as a commodity subject to government supervision and control.

The recognized necessity for the reclamation of the arid lands and the industrial development depending upon water demonstrate the necessity of some public control over the waters of streams in this country. The criminal destruction of timber at the headwaters of our water sources and the wasteful use of this timber, resulting in the destruction of streams, to my mind demonstrates the absolute necessity for some public control of this matter, and not leave it to the whims and caprices of the owners of riparian lands.

Now, I will take up another proposition, if your Honors please, that I think was suggested by coupsel yesterday in his closing remarks and suggested by his Honor, Justice Brewer, this morning—whether you could appropriate the water in Colorado, or appropriate the water in an upper State, and thus destroy the rights of a riparian owner in a lower State.

Our position on that proposition is that the taking of water from the upper reaches of a stream does not interfere with any vested right of a lower proprietor on that same stream that is protected by the Constitution of the United States. That proposition, if your Honor pleases, is based upon the decisions of this court in Manigault *vs.* Springs and Clark *vs.* Nash. In the first of these cases your Honors held that there can be no taking of property, as that term is used in the Constitution of the United States, unless there is a practical destruction of it or a material impairment

of its value. In Clark *vs.* Nash it was held by this court that the rights of a riparian owner to the waters running by his land are not the same in the arid region as they are in the humid region. This court has not defined the limitations of the right of a riparian owner to the waters within or originating within the arid region, but the decisions of other courts are to the effect that his superior right to such waters is limited to domestic purposes, and the law of necessity supports this rule. Now, if your Honors please, as a matter of fact, there can be no destruction of a stream below by irrigation above that will interfere with the supply needed for domestic purposes; hence irrigation does not have the effect of taking the property of a riparian owner, such as is protected by the Constitution of the United States. The evidence in this case conclusively shows that, by irrigation above, the more land there is irrigated and the longer it is irrigated the more there will be in the stream below for domestic needs. This was shown by the testimony of every witness placed on the stand by the Government, from Senator Warren all along the line of forty or fifty witnesses, the best experts in this country, and they all came to the conclusion, they all said, and it is not contradicted by a word of testimony offered by the State of Kansas in this case, that you cannot destroy a stream below for domestic purposes by irrigation above. Now, what is the fact, if your Honors please, with respect to this particular stream? I take but three witnesses, those introduced by the defendants, but residents in the State of Kansas, at Coolidge, near the Kansas-Colorado line. One of them is named Doherty and the other Rich, and I forgot the other's name. They testified they have lived for twenty years in that locality, and that the water in the river now coming across the State line from Colorado, at the low-water stages of the river, is greater than it was before irrigation began in Colorado. But that is not all. The evidence further shows, as stated by counsel who opened

this case for Kansas, that Colorado is taking every drop of water out of the river that she can possibly take down to the State line. Examine the brief of counsel for Kansas and you will find it there. Examine their own testimony and you will find it. It has been shown that almost thirty thousand acres are being irrigated within the watershed of that stream within the State of Kansas. No one knows that better than counsel who opened this case for the complainant. He knows the conditions around Garden City because he and I were there last summer and drove all around it. Now, under the conditions prevailing in western Kansas at the present time, by reason of defective ditches, by reason of inexperience, by reason of new soil, it requires at least five hundred second-feet of water to irrigate thirty thousand acres of land.

Assume that 250 feet, or one-half of this, is flood water. That leaves 250 second-feet of water in the Arkansas river in Kansas, and every drop of which comes from seepage from the irrigated lands in Colorado. Now, if your Honors please, can it be questioned for one moment that 250 second-feet of water, which, flowing for twenty-four hours, will cover five hundred acres a foot deep, is not sufficient to supply all domestic needs down to the 99th meridian, where the Arkansas river is replenished by tributaries in that State?

If your Honors please, I started out by saying that I believed this court had power, by decree, to declare what rule shall govern the waters of this stream west of the 99th meridian. That matter is discussed in our brief, and I have not time to enter into a discussion of it now. I assume that the court has the power in this case, because it will be admitted, if your Honors please, that neither State can solve the problem. It is before this court for solution, and we say that under the Constitution of the United States, by reason of the judicial powers conferred

upon it, the court has the inherent power to solve it and apply the rule. But just one moment before we come to that; there is another branch of this case that I wish to discuss.

Mr. Loomis said yesterday, in his argument, that you could not take this water above, in Colorado, without making compensation to the riparian owners below, in Kansas. Now, in view of the decisions of Fallbrook *vs.* Bradley, Clark *vs.* Nash, and Guiteras *vs.* Albuquerque, the taking of the waters of streams for irrigation purposes, whether by a State, corporation, or individual, is a taking for a public purpose.

Now, it is said that you cannot take the waters in Colorado, or that the Government cannot put up a reservoir on the Arkansas river in Colorado to impound the waters of this stream, to the deprivation of a riparian owner in Kansas, without making compensation to him.

Mr. Justice HARLAN: You are speaking about a reservoir on Government land?

Mr. CAMPBELL: Yes; or on any other land, or even an irrigator in Colorado. Now, if that is true—I am just speaking of the inconvenience of such a document—it rests in the power of one riparian owner in the State of Kansas, or the State of Nebraska, or upon any other interstate stream, to absolutely stand in the path of any progress or development in an upper State depending upon the waters of an interstate stream. And why do I say so? Your Honors laid it down, or assumed it to be the rule, in New York *vs.* Pine that a riparian owner in a lower State could not be deprived of his rights by legal proceedings in either State. In other words, that the law of eminent domain in neither the upper nor the lower State could be invoked against him. The law of the lower State cannot be invoked against him because the public purpose is in the upper State. The law of the upper State cannot be invoked against him to deprive

him of his riparian rights, because that law does not extend beyond the borders of that State.

Mr. Justice WHITE: Is that the case you are speaking of now with reference to the dam?

Mr. CAMPBELL: That is the dam case, and that is the principle, as I understand it, that is laid down in that case. One man in Kansas or Nebraska with forty acres of land on an interstate stream can hold out for a million dollars for his forty acres of land before he will allow the government in the upper State to erect a reservoir under the Reclamation act. I would ask of the farmers if the Constitution of the United States ever intended that one man should have such power as that. Now, the only way around this difficulty, if your Honors please, is to hold, as Mr. Justice Peckham indicated in Clark *vs.* Nash, that the superior rights of a riparian owner in the arid region to the waters of a stream are limited to domestic needs.

Mr. Justice HOLMES: Well, what rule do you say should be entered?

Mr. CAMPBELL: The appropriation and use of the waters of the streams for irrigation purposes. Limited by this principle, that the use shall be within the watershed of the river, so that sufficient water may return by seepage to supply domestic needs below, and further that he who is prior in time is prior in right, irrespective of State lines.

Now, as to the power of this court to apply this rule, I think it can be found, if your Honors please, in the doctrine of Mr. Justice Wilson, of whom his Honor, Mr. Justice Harlan, said that he was the most learned of all the members of the constitutional convention and one of the wisest in that body. Now, his doctrine is simply this—that the inherent power of the nation exists outside of the enumerated powers in the Constitution in cases where the object is beyond the power of the State, and was a power originally exercised or ordinarily exercised by sovereign nations.

Mr. Justice WHITE: Where did he say that?

Mr. CAMPBELL: Well, I take it from a magazine article written in respect to Justice Wilson that appeared in the *North American Review* for November 16, 1906.

Mr. Justice WHITE: He said that before the adoption of the Constitution.

Mr. CAMPBELL: But I understood from this article—I may be mistaken about that—that he never departed from the doctrine he laid down at the convention of Pennsylvania which was called for the purpose of adopting the Constitution.

Mr. Justice HARLAN: Does the Government contend that the application of the Colorado system of distributing water or any one of the systems comes in actual conflict with the Federal statute on irrigation, or is it——

Mr. CAMPBELL: I think that the administration of the water in Colorado is in harmony with the spirit of the laws of the Congress of the United States. Where we take issue with Colorado is as to her claim of sovereignty over the waters.

ORAL ARGUMENT OF HON. FRANK L. CAMPBELL, ASSISTANT ATTORNEY GENERAL OF THE UNITED STATES, FOR INTERVENOR.

Mr. CAMPBELL: May it please the court, the case has been so thoroughly covered by the gentleman who has just taken his seat, and as the law will be further argued by counsel who will succeed me, I have the light duty to perform of presenting to the court, not so much for its information, but in the way of refreshing the minds of your Honors, the phase of this conflict and contest and cause from the standpoint of governmental or public policy.

While this case relates specifically to the lands in and along the valley of the Arkansas river, the principle, whatever this court does in deciding it, will be far-reaching in its effects upon the entire arid region, as has already been intimated, and that is a very large slice out of this great country or ours, with its three million square miles in the United States proper, two-fifths or nearly one-half of which are in the arid region west of the 98th or 99th meridian as the eastern boundary of that arid region. Here we have nearly one hundred and fifty million square miles of land that are arid and that will remain so except as they can be reclaimed by private enterprise under State laws or under what is known as the Carey act, unless the Reclamation act of 1902 be so administered as to give it the full power and effect intended by the Congress. Now, it is hard for the human mind to grasp the scope of three million square miles, or two billion acres of land, nearly one billion of which are arid and depend upon the artificial application of water for their fertility and productiveness. I shall, in the few minutes that I take before the court, invite your Honors' attention to the question of governmental or public policy as indicated first by legislation, second by executive action, and third by judicial decision.

What is public policy, in a general way? Bouvier says it is a variable quantity which must and does vary with the habits and opportunities of the people.

Said this Court in 171 U. S.: "The public policy of the Government is to be found in the constitution and laws and the course of administration and decision" (St. L. Mining Co. *vs.* Mont. Mining Co., 171 U. S., 650–655).

To the same tenor and effect are numerous decisions of the superior courts of the States and of the subordinate Federal courts, to which I need not stop to refer at this time.

The policy of the Government, as shown from a legislative standpoint, is brought out in the various acts, most of which have already been referred to by associate counsel, relating to the mining laws, the desert lands and irrigation, and the first of these is that of July 26, 1866 (141 Stat., 253), familiar to your Honors, relating to the mining laws and to the appropriation and use of water for mining purposes, and from that act I will read a few words, from section 2339 of the Revised Statutes, which is a part of the act of 1866.

Mr. Justice WHITE: Taken from the act of 1866?

Mr. CAMPBELL: Yes, your Honor, codified from that act into the Revised Statutes:

> "Whenever by priority of possession rights to use water for mining, agricultural, manufacturing or other purposes have vested and accrued, the same are recognized and acknowledged by the local customs, laws and decisions of the courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purposes herein specified is acknowledged and confirmed" (2339, Rev. Stat.).

Mr. Justice DAY: These sections are also referred to in your brief?

Mr. CAMPBELL: Yes, sir.

Now, that was amended, the act of 1866 was amended by the act of July, 1870 (17 Stat., 218), also relating to mining matters in part, and that act is now in Sec. 2340, Rev. Stat., and reads as follows:

> "All patents granted or pre-emptions or homesteads allowed shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights, as may have been acquired under or recognized by the preceding section."

That is the section I first read to your Honors.

So we have here from these two acts as codified clear indications from the legislative branch of the Government of the right to divert and use water in a broad sense for mechanical and agricultural purposes. Now, that statute has been in operation and effect for about forty years, and as my colleague has said, in all that time its constitutionality has never been questioned, although it has been before the courts, including this court, many times.

The next act indicating the policy of the Government from a legislative standpoint is the act known as the Desert Land act. You will note as I go along referring to these acts the steady progress that the Government has been making during these forty years in the direction of the appropriation and use of water for agricultural purposes, which culminated in the act of 1902, known as the Reclamation act.

Section 1 of the act of 1877, commonly known as the Desert Land act, provides:

> "The waters of all lakes, rivers and other sources of water supply upon the public lands and not navigable shall remain and be held free for the appropriation and use of the public for irrigation, mining and manufacturing purposes, subject to existing rights" (19 Stat., 377).

Mr. Justice WHITE: What year was this last you have mentioned?

Mr. CAMPBELL: 1877.

That act was amended by the act of March 3, 1891 (26 Stat., 1096), which made some further general provisions, although continuing the general features of the act in force, and granted to any canal or ditch company duly incorporated, etc., certain water privileges, and says:

> "SEC. 18. That the right of way through the public lands and reservations of the United States is hereby granted to any canal or ditch company formed for the purpose of irrigation and duly organized under the laws of any State or Territory which shall have filed, or may hereafter file, with the Secretary of the Interior a copy of its articles of incorporation and due proofs of its organization under the same, to the extent of the ground occupied by the water of the reservoir and of the canal and its laterals, and fifty feet on each side of the marginal limits thereof; also the right to take from the public lands adjacent to the line of the canal or ditch material, earth, and stone necessary for the construction of such canal or ditch: *Provided,* That no such right of way shall be so located as to interfere with the proper occupation by the Government of any such reservation, and all maps of location shall be subject to the approval of the department of the Government having jurisdiction of such reservation, and the privilege herein granted shall not be construed to interfere with the control of water for irrigation and other purposes under authority of the respective States or Territories."

So much for the acts of 1877 and 1891.

Now, let me go back just a little in chronological order and refer for a moment to the joint resolution of March 20, 1888, coming in between these last two desert land acts to which I have referred. I would like to take the time to read that entire resolution, including the preamble. I will

read the first paragraph of the preamble; the others are of like tenor. There are three paragraphs in the preamble:

> "Paragraph 1. Whereas, a large portion of the unoccupied public lands of the United States is located within what is known as the arid region and is now utilized only for grazing purposes but much of which, by means of irrigation, may be rendered as fertile and productive as any lands in the world, capable of supporting a large population, thereby adding to the national wealth and prosperity."

The other two paragraphs are on the same line. Then follows the resolution:

> "*Be it Resolved*" (*etc.*), "That the Secretary of the Interior, by means of the director of the Geological Survey, be and he is hereby directed to make an examination of that portion of the arid region of the United States where agriculture is carried on by means of irrigation, as to the natural advantages for the storage of water for irrigating purposes and the practicability of constructing reservoirs, together with the capacity of the stream and the cost of construction and the capacity of reservoirs, and such other facts as bear upon the question of the storage of water for irrigating purposes, and that he be further directed to report to Congress as soon as practicable the result of such investigation."

That investigation was made, and the result was, after a few years, the enactment of the law of 1902, known as the Reclamation act. These investigations continued for several years, as it was no easy matter to make the necessary investigations and get the report through to Congress.

So that, after nearly forty years, when Congress first recognized this right to appropriate and use water the culmination was this act of 1902 that has now been in operation and is getting fairly well under way, and it has already demonstrated itself to be one of the most beneficial acts ever placed

upon the statute books; although yet in its infancy, progress is being made, rapid and steady progress, and the developments are such now as to demonstrate that it will be a beneficial and very helpful act to the people of this country, and the only way in which they can thoroughly reclaim, I may say, over one million square miles which lie within the arid region.

I might have referred, in getting down to this act, to what is shown as the Carey act, approved August 4, 1894 (28 Stat., 422), which has already been mentioned and with which the court is familiar. That, as your Honors know, was an act providing for the granting of a million acres of land to each of the arid States, naming them, denominated and called arid, on condition that they, the States, would reclaim or cause to be reclaimed the lands so appropriated, so that twenty acres of each one hundred and sixty was actually under water and under cultivation. That act has not proven as satisfactory in every way as it was thought it would, and that perhaps had much to do with suggesting and bringing about the enactment of the general reclamation law of 1902.

I might further say before leaving this branch of the subject that Congress has over and over again recognized the validity and the necessity for legislation along the lines which I am discussing by repeated appropriations. I have cited here—it is in our brief—thirteen different acts of Congress regarding and looking to the agricultural development of the arid lands, making liberal appropriations for investigation, for examination and development, and nine acts of Congress looking to the furnishing of money for the application and use of machinery for this development. So Congress has over and over and over again recognized the principles which are suggested by the acts of 1866 and 1870, 1877, 1894, and 1902. I think I need not dwell longer on that feature of the case.

I now come to the policy of the Government in regard to

reclamation as indicated by actions and decisions of the executive branch of the Government. I will not stop to discuss or even refer to the numerous decisions of the Interior Department under these acts, showing that from the act of 1866, down to the present time, the Department has followed the letter, and, as we believe, the spirit of all these laws to which I have referred, and the Government and the people of the arid country have had the benefit of such policy and action. To cite many of these would unduly take up the time of the court and might be tiresome. I may, however, refer to some expressions coming from the Chief Executive by message to Congress.

In the first session of the Fifty-first Congress, in 1901, prior to the passage of the act of 1902—and which may have had something to do with the enactment of that law—the President said in his annual message to that Congress:

> "The western half of the United States could sustain a population greater than that of our whole country to-day if the waters that now run to waste were saved and used by irrigation. The forests and water problems are perhaps the most vital internal questions of the United States."

No one will attempt to gainsay that general proposition.

> "The object of the Government is to dispose of the land to settlers who will build homes upon it, and to accomplish this object water must be brought within their reach."

And that can only be done in that country by conducting water artifically onto these lands which are now crying out in their thirst for water, having which they will become as fertile as any country in the humid region, and more productive, because when they once get the water they can apply it as they choose and as good judgment dictates and not wait for rains to come, which do not always come when they are most needed.

The President in the same message further referred to this important question in detail and said—I will read one sentence out of two or three that he devoted to the question:

> "The reclamation and settlement of the arid lands will enrich every portion of our country, just as the settlement of the Ohio and Mississippi valleys brought prosperity to the Atlantic States."

That has already been dwelt upon by some of counsel who have been before the court. It is not only the immediate results to the settler, the direct results, but the benefits which flow through him to his neighbor, and his neighbor may be in San Francisco or he may be in New York, in the sense in which I use that term, because when the products are grown they are shipped to the markets which will best take them, so the entire country is being benefited. And hence the reason for this public policy which has been outlined, as suggested, by legislation up to the present time and which is so highly commended and commented upon by the Chief Executive of our Nation.

I should have said before leaving the legislative branch of the subject that since the act of 1902 was passed—that act made the minimum farm forty acres and the maximum one hundred and sixty acres—the act of June 27, 1906, four years later, made the minimum as low as ten and the maximum one hundred and sixty acres; that to be arranged under the discretion and direction of the Secretary of the Interior, who was presumed to know or would investigate if he did not know what the conditions were in any special locality, because there are some localities where ten acres are worth more than one hundred and sixty in others, that is, where the products would be greater in quantity and value.

Other messages from the President to the 57th and 58th and 59th Congresses might be discussed, but they are referred to and quoted from in our brief, and I do not feel justified in further taking the time of the court in referring to them.

Now, as to the policy of the Government with respect to irrigation, as indicated by the judicial department of the Government.

In Atchison *vs.* Peterson, 20 Wall.—that was long prior to even the Desert Land act and grew out of a decision which was the result of litigation under the mineral law, the act of 1866—Mr. Justice Field said:

> "Said section (sec. 1, act 1866) was a recognition by Congress of the doctrine of prior appropriation of the waters of natural streams for beneficial purposes."

And again in the same book of Wallace, the 20th, the same justice, in the case of Basey *et al. vs.* Gallagher, said:

> "The question on the merits in this case is whether the right to running water on the public lands of the United States for the purpose of irrigation can be acquired by prior appropriation as against parties not having the title from the government."

Then in Atchison *vs.* Peterson (20 Wall., 507), this court says:

> "The first appropriator who subjects the property to use, or takes the necessary steps for that purpose, is regarded, except as against the Government, as the source of title in all controversies relating to the property. As respects the use of water for mining purposes, the doctrines of the common law declaratory of the rights of riparian owners were, at an early day, after the discovery of gold, found to be inapplicable or applicable only in a limited extent to the necessities of miners, and were inadequate to their protection."

The court, in effect, said in that case that the act of 1866 was, in a sense, simply declaratory of rights that already existed regarding the appropriation of water. This court said in Basey *vs.* Gallagher, *supra:*

> "The views expressed and the rulings made are equally applicable to the use of water on the lands for the purposes of irrigation."

Again, in the same case, at page 683, Justice Field said, speaking for this court:

> "Ever since that decision (referring to a decision of the supreme court of California) it has been held generally throughout the Pacific States and Territories that the right to water by appropriation for any beneficial purposes is entitled to protection."

In Broder *vs.* Water Co., 101 U. S., Justice Miller said, among other things:

> "It is the established doctrine of this court that rights of miners, who had taken possession of mines and worked and developed them, and the rights of persons who had constructed canals and ditches to be used in mining operations and for purposes of agricultural irrigation, in the region where such artificial use of the water was an absolute necessity, are rights which the Government had, by its conduct, recognized and encouraged and was bound to protect, before the passage of the act of 1866."

Again, a declaration that the act of 1866 was a recognition of pre-existing rights rather than the declaration of a right.

Then, again, in Fallbrook Irrigation District *vs.* Bradley, 164 U. S., 112, Mr. Justice Peckham, speaking for this court, said that to bring under cultivation large areas of arid lands "would seem to be a public purpose and a matter of public interest, not confined to the land owners, or even to any one section of the State."

In Guitteres *vs.* Albuquerque Land and Irrigation Co. (188 U. S., 545), which has been referred to by my associate, I will quote just a word:

> "The court upheld the right of the territorial legislature to enact a statute providing for the organi-

> zation of corporations for the purpose of constructing and maintaining reservoirs and canals and ditches or pipe lines for the purpose of irrigating riparian and non-riparian lands."

And in Clark *vs.* Nash, which has also been referred to by several counsel, the court said, among other things, that the decision (referring to a statute which provided for condemnation proceedings for the purpose of obtaining water to irrigate lands) "was based upon the ground that irrigation was a public use."

I have thus, may it please the court, very briefly outlined the trend of legislation on this subject, showing its progress, steady though gradual, until the act of 1902. I have not taken the time to outline in detail, but to merely state that the executive branch of the Government, from the President to the Secretary of the Interior and those acting under him, have uniformly worked along the lines, which the enactments by Congress have suggested, of the appropriation for beneficial uses of the waters of the arid west. I have simply referred to some of the decisions of this court upon the subject, but they are more fully quoted from in our brief, and will be noted by the court when it comes to consider the case.

Now, may it please the court, it is already apparent to your Honors that the Government does not fully agree or coincide with either the complainant in this case or with the defendant. We do not accept the strict doctrine of riparian rights. We do not believe that was intended. We do not believe it is necessary to accept it, and we hope this court will find it is not, because if the conclusion should be in support of the strict common-law doctrine of riparian rights, then the Reclamation act is practically nullified and destroyed and made of no effect. On the other hand, we do not fully agree with Colorado in her assertion of the doctrine of sovereignty over the waters within her borders and of abso-

lute control and ownership in them, for to accept that doctrine would be, if not to destroy, greatly to impede and retard, the development which is now going on and which will go on for years to come, unless the act is repealed, which it never will be unless declared unconstitutional. It would be to retard that work, because neither the Government would want to go on and spend money by the millions with the liability of being held up by some State because it wanted the waters of an interstate stream; nor would private capital go in and take the risk. So that our hope is, your Honors, that you will find your way clear—as we have reason to believe you will, and, if you see this case as we do, we are sure you will—to render such a judgment and decree, as not only will not retard and impede or destroy the execution of the law as laid down in the Reclamation act, under which over thirty millions of dollars have already been expended, or contracted to be expended, but will so decree as to give to that act and the final action being taken and to be taken under it, an impetus to go forward with it, a reassurance that the money expended under it will be returned by those who will come in readily and pre-empt and occupy, and, knowing they are safe in doing so, buy these lands and pay for the water rights, which the act gives them ten years to do. Then, as your Honors know, the money flows back to the Government and is used over and over again in rotation. That thirty-odd millions of dollars can be used for centuries, or, for that matter, so long as the further development of irrigation and reclamation are necessary. As soon as paid by the present or immediate holders back to the Government, the money so paid goes again into the same fund, to be used over and over again until this entire million and more square miles shall have been reclaimed; and as Mr. Hill, to whom my colleague referred a while ago, in that speech of which he made mention, prophesied we will have by the middle

of this century two hundred millions of people, and he raised the question, very pertinently, how are we going to provide for them? They cannot well be provided for unless this irrigation project is assisted by the Government and sustained by this court. This is a young country, but a very rapidly growing one in population and resources. There is a wish to which the heart of every one gives utterance. At early dawn it steals into the mind and nerves us for the conflict of the coming day. At nightfall it still lingers, and, even when sleep has locked us in its embrace, the ever-active imagination loves to dwell on this dearest of its idols. This earnest wish, this sincere desire, is for success in that which we undertake. Now, this young nation is not more than twice as old, as a constitutional government, as I am, or as most of the members of this court are—say we multiply our age by two, and you will have more years than this constitutional government is old—and now, in its early and virile youth or young manhood, so to speak, as the ages of nations go, it has projected this great scheme by authority of Congress, and it is the desire of the executive branch of the Government to see that scheme entirely successful, and those two hundred millions of people that we are to have in fifty years, or a little more, from now provided for, both in employment and food and other necessities of life.

(The Solicitor General having heretofore filed a printed abstract of his oral argument, the stenographic report thereof is omitted here.)

ORAL ARGUMENT OF HON. NATHAN C. MILLER, ATTORNEY GENERAL OF COLORADO, FOR DEFENDANT COLORADO.

Mr. MILLER: May it please the Court, I presume the first thing that will be considered in this case is whether the evidence sustains the controversy raised by the pleadings.

I desire to review the amended bill for the purpose of showing what is that controversy. The material allegations are as follows:

1. The State of Colorado is alleged to operate and control some ditches and reservoirs (page 62 of Record).

2. The river in its course after leaving the mountains is a navigable stream under the rules and regulations of the United States (page 63 of Record).

3. The lands adjacent to the river in the State of Colorado are of such a nature that they are not saturated to any appreciable extent by the waters diverted from the river and its tributaries (page 63 of Record).

4. The volume of water in the river flowing from the State of Colorado into the State of Kansas was formerly very large, being upwards of two thousand cubic feet per second (page 63 of Record).

5. There is no underflow to said river in the State of Colorado except in and under the bed of said river (page 64 of Record).

6. The water which flows in the river from the State of Colorado into the State of Kansas furnishes almost the entire supply of water for the underflow in the valley of said river in Kansas (page 64 of Record).

7. The flow of water in the river bed is of great value to the people of Kansas by reason of the fact that the evaporation from the river tends to cool and moisten the surrounding atmosphere, thereby greatly promoting the growth of vegetation and the health of the people (page 65 of Record).

8. The evaporation at the east end of the valley in Kansas is about 60 inches, and at the west end about 90 inches (page 65 of Record).

9. The exhaustion of the flow in the Arkansas river will render the uplands unavailable for grazing (page 65 of Record).

10. The agricultural population of the Arkansas valley in Kansas is about 50,000 persons, and the urban population is about 60,000 (page 66 of Record).

11. The value of the bottom lands in the State of Kansas is from $5 to $100 per acre, and the average value of all of said lands is not less than $25 per acre (page 66 of Record).

12. By reason of the wrongs complained of in the bill, the value of said lands has shrunk many millions of dollars and the revenues of the State greatly diminished (page 66 of Record).

13. Near Dodge City, in the county of Ford, the State of Kansas owns a tract of land comprising 126.56 acres, used for the maintenance of a Soldiers' Home. This land is used for raising grains, fruits, grasses, etc., and is greatly damaged by the diminution of the flow in the Arkansas river (page 68 of Record).

14. In the county of Reno, near Hutchinson, the State owns 640 acres of land on which it has built an industrial reformatory, and the crops are greatly damaged by the diminution of the alleged underflow (page 68 of Record).

15. The State of Colorado by its laws and judicial decisions has upheld the diversion of water and the exhaustion of the natural flow of the river within its borders to the great damage of the State of Kansas and its people (page 70 of Record).

16. The appropriations from the Arkansas river amount to 4,200 cubic feet, and from the tributaries, 4,300 cubic feet, and the average flow of the Arkansas river in the State of Colorado does not at any point exceed 700 cubic feet per second, and the average flow of the tributaries does not exceed 700 cubic feet per second (page 70 of Record).

17. The State of Colorado has, since the year 1890, at and near the city of Cañon, in said State, constructed a great canal for the purpose of diverting water from the Arkansas river (page 72 of Record).

18. The State of Colorado intends and is threatening to build other canals similar in size and character and design for the purpose of diverting water from the Arkansas river (page 72 of Record).

19. The State of Colorado has erected large reservoirs for the purpose of storing the natural and flood waters of said river (page 72 of Record).

20. The State of Kansas and its inhabitants have been greatly damaged and have been irreparably injured by the diversion of water from said river in the State of Colorado; that wells which should furnish water for domestic use have become dry; that crops, trees and vegetation languish and decline and in many places wither and perish (pages 73-74 of Record).

21. The channel of the river above the city of Wichita becomes dry and the sand, dirt and debris drift in, and when

the flood waters come, an overflow is caused thereby, to the great damage of the adjacent lands and property (page 74 of Record).

The relief demanded in this case depends on the existence of damage.

The taking of water from the river, the impounding of flood waters, the diminishing of the ground water may all occur, but in the absence of damage to the State of Kansas or her citizens in the valley of the Arkansas generally, there is no ground for injunctive relief.

Most of these allegations are only alleged causes of damage; if, therefore, the evidence does not establish the existence of injury to the State or serious injury to her people, the controvery set forth in the bill is not sustained.

The damages averred are loss of crops, drying up of wells, dry atmosphere, decrease in the value of lands, damage to the Soldiers' Home and Reformatory, and the lands belonging to these State institutions, and loss of revenue to the State. It is a big undertaking to go through 2,200 pages of printed record to show that these allegations are not supported by the testimony. I can only refer to the testimony generally, and then ask leave to file a printed abstract of the evidence of citizens of Kansas going to prove the falsity of these imaginary injuries stated in the bill.

Excluding all that may be said by witnesses in Colorado, and witnesses from other States and territories, I submit that a consideration of the testimony produced by citizens of Kansas alone makes it clear:

First. That the value of the lands have greatly increased.

Second. That there has been no failure of crops caused by irrigation in Colorado.

Third. That the climatic conditions have improved.

Fourth. That the general prosperity of the towns and agricultural regions has become constantly better.

Fifth. That the allegations concerning the loss of revenues are untrue, because of the increase in wealth and the enhanced value of lands.

Sixth. The preponderance of evidence refutes the alleged injury to the lands belonging to the Soldiers' Home at Dodge City.

Seventh. There is a total lack of testimony as to any injury to the Industrial Reformatory at Hutchinson.

Eighth. That the State of Colorado is not the proprietor or the operator of any ditches or canals and is not threatening to divert any water.

Ninth. There is no evidence supporting allegations numbered three (3), four (4), five (5), six (6), seventeen (17), and eighteen (18).

LAW PROPOSITIONS.

1. The right to divert water from a stream for irrigation of arid lands exists independent of statute.

2. Proposition numbered two is immaterial because a river must be navigable as a matter of fact.

The Daniel Ball (10 Wall., 557, 563).

A great deal has been introduced in evidence concerning ditches in western Kansas. But there are no allegations in the complaint whatever concerning the construction of any ditches in western Kansas, dates of appropriation of water or what lands the waters have been appropriated for, or what beneficial use has been made of the waters.

I take it for granted that although this court sits as a tribunal to settle controversies between States, nevertheless, when one of these States comes before this tribunal, she must

set forth in clear and definite terms exactly what she wants the court to pass upon. And I think we have a right to object to anything being considered in this case that has not been fairly and clearly and definitely presented in the pleadings, and, therefore, I would say that the evidence relating to the irrigation ditches in western Kansas should be disregarded.

Now, proceeding further upon that point, may it please the court, it would be impossible, under the state of the evidence in this case, to pass upon the relative rights of irrigators in western Kansas and Colorado. It is a necessity that those rights be taken up individually and specifically before they can be determined. You cannot merely allege that the citizens of western Kansas at an earlier date appropriated water, and that later the citizens of Colorado diverted water from the river and say that makes a case. There are an infinite number of issues that arise in determining questions betwen rival claimants to water that must be heard and considered before a decree can be entered. Furthermore, this question was not gone into except in a slight degree until the rebuttal testimony was reached, and then the evidence does not come up to the requirement to establish a water right. The State of Colorado had no opportunity to go into the question of the abandonment of the assumed water rights in western Kansas, or to introduce testimony touching the failure of the citizens of Kansas to make a beneficial use of the water or to produce facts that might show the right of the citizens of Colorado to the use of the water from economic considerations to be superior even though her citizens are junior appropriators. Therefore, I assume that this question is not one of the issues in this case.

Now, if the pleadings must fairly and definitely set forth a controversy, they must set forth certain rights either belonging to the State of Kansas or to the citizens of Kansas, and those rights must be sustained by some law. Now, what are those rights? Mr. Ashbaugh, of counsel for Kansas, went

into a number of these supposed claims in his opening argument. We find the first question presented is the underflow that is alleged to exist south and east of Great Bend; somewhere near there is the 99th meridian of longitude which defines the boundary between the arid land and the humid area of Kansas. Now, down below there the valley is about three miles wide in places, opening out in the neighborhood of Hutchinson to probably twenty-five miles on account of certain streams that come in, and as you go down to Wichita it is probably seven miles wide. Now, admitting that there is an underflow, we submit that before any controversy can arise there must be some damage proven. The plaintiff is not entitled to the relief prayed for merely because an underflow is proven, unless there is proof of actual damages done to the citizens or to the State.

First, as to the damages claimed by the State to its own lands in Ford county, where is located the Soldiers' Home. There are one hundred and twenty-six acres of land at this place adjacent to the river. Now, in relation to this land, there were three witnesses examined, two for the defense and one for the plaintiff produced on rebuttal. The witnesses used by Colorado are Sidlow and Spencer. They were quartermasters at the Soldiers' Home. They were brought to the stand and examined by the State of Colorado at the instance of the commandant of the home. Mr. Thomas said that they had been familiar with the land for a long period of years and knew more about its condition than any other persons, and when they were interrogated as to its productiveness, they said it was as good as it was in former years. Mr. Thomas does not point out any damages to the "Home" or the land, except he says that the yield of wild hay is not so good as it used to be. When we come to the land belonging to the State in Reno county, which is the Industrial Reformatory near Hutchinson, there is no proof whatever in this record that any damage results to it from the diversion of water in Colorado. In fact they abandon that issue alto-

gether. As to the loss of revenue claimed to have resulted from the diminished value of the land belonging to citizens, we find that the entire evidence shows that there has been a remarkable increase in the market value. Now, it seems to me we may lay aside the direct interest which the State of Kansas pretends to have in this suit and say that her only position before this court is on behalf of her citizens.

Now, I assume that when a State comes before this court and undertakes to settle a controversy between herself and another State, there must be some clear and definite allegations as to what those damages are. The evidence so far as her own citizens are concerned should not be conflicting. I will submit that an examination of the testimony in this case, taken from the citizens of Kansas alone, establishes that the lands have been advancing in value, that the crops are fully as good now as they were in years past. That numerous witnesses testify that the underflow has not been reduced and that the flow of the stream is as good now as it was in former years.

I have collected, from the witnesses of Kansas, extracts in regard to those portions of the testimony, and I ask to file it as part of my argument. Excluding altogether what the citizens of Colorado have had to say as well as the citizens of New Mexico and Wyoming, and the other witnesses examined, I submit that the preponderance of the testimony from the citizens of Kansas alone will demonstrate to this court that no damage has resulted to the citizens of Kansas. Suppose it is true that there are some farmers along the valley claiming injury from the diversion of water in Colorado, does that make it a controversy that should be maintained on behalf of one State against another State? I do not so understand the decisions of this court. It seems to me that if the diminution of the underflow of the Arkansas river has resulted in any injury to the citizens of Kansas it must be a general one and office holders and farmers could not

go on the witness stand and, in answer to interrogatories by counsel for Colorado, say that they have never heard of any injury to their neighbors nor any complaints until this suit was commenced. While there can be doubt as to the cause of the great damages described in the bill, if they exist, there ought to be no doubt as to their existence.

There is one point made by the solicitor general, which I think I will refer to this afternoon instead of going into the questions of damages as fully as I intend to do in the morning: I do not understand that Congress has assumed jurisdiction over the distribution of the waters in the arid region or has undertaken to pass any legislation that exercises control over the waters of the streams in the arid region. What I understand Congress to have done is to have passed a number of acts approving and authorizing the settlers of the western country to use the public domain for the construction of reservoirs and for the building of canals across; in reference to the work of reclamation undertaken by the Government itself, those canals and reservoirs are built subject to State law; even in the Reclamation act itself there is a clause expressly providing that the appropriation of waters shall be subject to the State laws. And so it results that when the Reclamation Service goes into a State or territory the Government files on a given quantity of water just the same as a citizen of Colorado or a citizen of Wyoming has to do. Take it in the large project in the Gunnison country, which the Government is now constructing in Colorado, they have filed in the State engineer's office of Colorado a map showing their ditches, canals and reservoirs and what lands the water is to be used upon, and in no instance is there any law upon the Federal statute books giving any control to any officers of the Federal Government of the waters of the States.

An adjournment was thereupon taken until December 20, 1906, at 12 o'clock m.

WASHINGTON, D. C.,
December 20, 1906—12 o'clock m.

Solicitor General HOYT: May it please the court, Mr. Attorney General Miller has yielded to me for one moment. The proposition which I endeavored to state to the court yesterday is hardly indicated in our brief, and I hesitate about adding another document here, but I ask permission of the court to file a summary of my oral argument. I wish to make it especially plain that in what I said about inherent power I was assuming but not admitting that this case did not fall within the enumerated powers. I of course concede the power of the United States here or anywhere, and I certainly wish to be so understood, and I wish to make that clear in the summary of my oral argument which I shall file. I shall file it within three days and of course send it to all of the opposing counsel.

Mr. MILLER (continuing): May it please the court, this case was argued once upon a demurrer to the original bill. At that time the position of the State of Colorado was set forth at length as to the control of the waters within the State. I desire to call the court's attention to the fact that the demurrer was not overruled nor the motion to dismiss denied, but that the matter was deferred until the evidence should be taken in this case and the issues should come on for final hearing upon the evidence and pleadings.

The State of Colorado claims that the right to use water for irrigation depends upon the appropriation of water for beneficial uses. We do not recede from that position at this time, although we go further and say that independent of her laws and the decisions of her courts, the principles of the common law are sufficient to grant and sustain the doctrine of irrigation based on priority of rights. So that we insist that we have the right to appropriate the waters of the running streams of the State for beneficial uses and that priority of time gives superiority of right in use. The only qualifi-

cation we make is in such cases as would lead to great waste from its application and enforcement.

This bill was filed for the purpose of obtaining an injunction against the State of Colorado and certain officers of the State, and the foundation of the action must necessarily be damages. The mere fact that the flow of any stream has been lessened, the mere fact that some alleged underflow has been diminished, in the absence of damage, affords no ground for injunctive relief and gives no cause of action. So that it seems to me the first question, primarily, to be investigated and determined in this hearing is the allegation of damages.

As I said yesterday, there has been a contention made in the introduction of the testimony as to injury to the ditches in western Kansas. I call the court's attention to the absence of any allegation in the pleadings in this respect. I think I stated broadly that there was no effort made to prove anything concerning these ditches in the direct testimony. In that I am somewhat mistaken. There was a reference made to the fact that ditches had been constructed in an early day, but there was no attempt made to comply with the requirements of law in sustaining a water right acquired or supposed to be acquired under those ditches. It must necessarily be established that there was a ditch constructed and that there was water taken from the stream into the ditch and applied to certain land for beneficial uses, and that particular beneficial use must be designated and proven. It must be shown that the use has continued to the present time. But there is no attempt anywhere in this case, whether we consider the evidence in rebuttal or in chief, to comply with this requirement of the law. So that whether we review these ditches from the petition filed or whether we study the facts from the evidence presented, the question cannot be fairly considered by the court.

When the petition was filed in this case, a motion to dis-

miss, and afterwards a demurrer to the petition was presented to the court and argued. The court considered that in view of all the allegations contained in the petition there was a controversy fairly presented between the State of Kansas and the State of Colorado. Probably anybody reading the petition would believe that there was a serious controversy presented, and if you will take the picture that is presented by the complainant at page 184 of her brief, where she speaks of the diminution of the flow of the Arkansas river and says that "its navigable capacity is destroyed and the natural and normal flow of the river has been decreased and that the underflow has been lowered until it is not any longer valuable for maturing crops and fruits in the Arkansas valley, that it has greatly lessened the yield per acre and the value of the lands, and that the water power at Arkansas City has been injured and the irrigation ditches in western Kansas have been deprived of their water of long prior appropriation, leaving them ruined, the lands deserted and the resulting industries and prosperity almost extinct," you will observe a most alarming and extravagant statement. It is no wonder that the court refused to sustain the demurrer to the petition or to dismiss the suit. It is alleged "That the revenues of the State of Kansas have been materially decreased, and that the general prosperity of a vast region and of a considerable population has been impaired beyond computation or any measure of exact definition." Now, one reading these unqualified assertions of damage would think that total ruin had been wrought to the Arkansas valley in Kansas by the diversion of water in Colorado. But, on the contrary, I expect to show from the best citizens of Kansas that there is not a single statement made in that paragraph that is not contradicted by a majority.

If it is a fact that the crops of Kansas have been destroyed, let the cause be what it may, can there be any disagreement among the citizens of Kansas as to the fact? If devastation

and desolation have been wrought on every hand along this once fertile, rich and prosperous valley, how does it happen that people who live in the valley disagree as to the fact of its existence? Let it be conceded that the fact does exist, there may be some disagreement as to the cause, but I cannot imagine that the citizens of Kansas can have any dispute as to the fact.

It has been repeatedly stated in the argument of this case that the suit was inspired by Mr. Murdock, of Wichita, that he called one or two conventions in the city of Wichita and afterwards published various articles in his newspaper until, as he says in his testimony, he succeeded in bringing this case about. Now, we would naturally expect the people who live in Mr. Murdock's community to have some knowledge of this great disaster that has resulted to the State of Kansas from irrigation in Colorado. Here is what Mr. Hall, one of the witnesses in Wichita says:

> "As to the flow of the Arkansas river during the first seven or eight years that I saw it, compared with the last seven or eight years, I can't see any difference between the river in the first seven years and the last seven years, and that applies to the dry seasons of the year as well as to the time when they have the rises in the river" (p. 6409, Record).

I have quoted in my book of extracts more than twenty other citizens of Wichita to the same effect.

Now, let us recur to the river and see the reasonableness of the statement of Mr. Hall. Let us picture this river to ourselves as it emerges from the mountains and then passes out upon the plains. We will concede that as the river starts from Tennessee pass and comes on down through Lake and Chaffee counties and emerges at the Royal gorge into Fremont county that it is a living stream fed by small running creeks from the mountains. But when it passes out of these mountains it comes upon a dry, parched plain, once marked upon all the geographies that most of us have studied in our

school days "Great American Desert," no longer, however, marked as such. There is not a constant stream of water that enters that river from the time it passes onto the plains until it reaches Hutchinson, Kansas. They are all marked on the map here as rivers, but for the most part they are as dry as Pennsylvania avenue during every day of the year. They are simply a sort of drainage for waters when heavy rains descend or when the heavy snows melt in the spring or when a cloudburst occurs. For a few days, possibly you might find them running full and then the water entirely disappears and they are afterwards perfectly dry like the streets of this city. So that there is only the 750 cubic feet of water per second of time contained in the stream as it emerges from the Royal gorge above Cañon City to perpetuate the flow until it reaches Hutchinson. Now, that is what we have to start with as the flow of this stream. It passes through 350 miles of parched, dry climate, which has a power of absorption far beyond anything that you are accustomed to in this eastern country, a dry atmosphere that would take the moisture off the ground in a few hours where mud would lie for days in the eastern or humid regions. That is the country this river goes through. Is it a narrow channel? No, it is spread from twelve hundred to a thousand feet in width. It is immense in width, but hardly anything in depth.

Mr. Justice WHITE: Counsel stated the other day and I made a memorandum. As I understand it, from where the river debouches from the cañon in Colorado there are about 350 miles of its course in Colorado and about 357 in Kansas.

Mr. MILLER: Yes, sir; that is correct. So that when Mr. Hall, of Wichita, a farmer who lives and owns a farm on the banks of the river, tells this court that the flow of that stream is more steady today than it was from the years 1870 to 1879, he is supported by the physical conditions of the stream and the climate through which the river passes. The waters of that stream disappear into the sands; it evaporates and goes

off in the form of clouds, and that is the reason it was not a steady flowing stream in the early days. Now, what is the river's condition today? Instead of a dry hard plain, on which the rain would fall in the early days and be cast off with the same rapidity and suddenness with which they would from the asphalt pavement of Pennsylvania avenue, we have today a plowed soil possessing the capacity of absorption, the retention of water, and the water instead of dashing off these plains into the river and for a few hours maintaining a great flood in the stream, the water is released gradually into the stream, and while there may not be as great a volume in the river at certain times, yet there is a steadier and more constant flow in the river as a consequence of irrigation and the cultivation of the soil. And so you will find in this book which I have prepared and which I have asked to file as a part of my argument in the case, that many of the citizens of Kansas testified to the fact that the flow of the stream in the State of Kansas today is more constant and steady than it was during the earlier days.

I wish to call the court's attention to just one of these witnesses, because I must leave it to the court to read the extracts. I wish to cite Mr. Juneau, of Dodge City. Now, Mr. Juneau is one of the most prosperous men in western Kansas. He is a prominent hardware merchant and lumber dealer and owner of lands. He is what you might call the foremost citizen in western Kansas. He says a great many things derogatory to this suit, but I am not going to refer to those statements, but to what he says concerning the flow of the river. He says in one place that he is opposed to the prosecution of this suit and has advised against it. I will read a short extract from his testimony:

> "Yes, sir; I came here in 1876, and as to the flow of the river in recent years compared with the flow in the earlier years, taking it over a period of enough years to make allowance for any peculiar conditions, I would say, for instance, in 1877 I had a shop on the land adjoining the Manhattan hotel in Wichita. My

> shop was about two feet high from the ground, and the water came in and covered the floor of my shop about six inches. That was in May, 1877. The following September the river was dry. That shows the two extremes in one year, you understand. I should think that the flow now is more even, if anything, than what it was in the earlier years, but in the earlier years we were more liable to floods and violent extremes, both in storms and in the rise of the river (p. 5763, Record). But in taking it as a river for practical purposes at this point, in my judgment it is as good a river now as it was when I first knew it. I believe it is."

Now, there is a large number of Kansas witnesses that testify to the same thing, bearing out just exactly what Professor Carpenter and Professor Mead, the Government expert and one of the Government officials, have testified to, as well as other witnesses. So that we have the testimony of experts declaring that certain conditions will be followed by definite results. The farmers, merchants and bankers in Kansas tell us that the results forecast by experts are now enjoyed. The climate has improved, the rains are better distributed, the rain belt is moving farther west, the flow of the stream is steadier, old ditches once abandoned for want of water have been purchased by the farmers because they are now well supplied. These are the facts set forth in the evidence of the citizens of Kansas and contained in the book of extracts which I shall ask to file as a part of my argument. The experts, Mr. Carpenter, Mead and Johnson, all testify that these improved conditions will follow after a long period of years, from irrigation, and the greater the area over which the irrigation is spread the more marked will be the changes of the physical condition of the country.

There is a great conflict in the testimony of the witnesses of Kansas in regard to the character of the underflow. In general, I may say that there has been no systematic investigation on the part of any of these witnesses used by Kansas

who testify concerning the alleged underflow. The evidence is not convincing as to whether it is ordinary ground water or an underground stream flowing in a fixed channel. It is a mere matter of guess with them. The whole subject is one in which they draw a radical conclusion from a single incident. Some person comes along and says he dug a well and put a little fluid in the water and found that it floated down to the other side of the well. From this he seeks to establish a current. Another says he dug two wells and put certain material in number 1 and found that it floated into the lower. From this solitary experiment, we find an inference has been drawn and given as positive testimony. You are asked to take this as competent proof on which to determine the existence of an underflow. It is possible that where this experiment was made, exceptional conditions prevailed allowing the result to take place, just as told by the witnesses. The mere fact that the current is found between two wells is not sufficient evidence to demonstrate the existence of an underflow across the entire valley of the Arkansas river, covering an expanse of from 3 to 7 miles in width. Now, there has been no systematic or scientific research by Kansas as to this underflow, or where it comes from, or as to whether it is percolating water or sheet water, such as is found near the channel of every river. While, on the other hand, the State of Colorado and the Government have gone to considerable expense in investigating its true nature and the testimony of the experts, Messrs. Carpenter, Johnson, Schlichter and Newell is to the effect that it is only the ordinary ground water which accompanies every stream, and that its chief source of supply is from the great watershed of the plains, and not from the natural flow of the Arkansas river, with its 750 cubic feet of water per second of time, as it emerges from the Royal gorge.

Now, here is one of the witnesses on the part of Kansas. Speaking of the underflow, he says:

> "The next well I dug was where I am living now. I moved to another piece of land, or rather on higher

> ground, and that is perhaps 300 yards from the second well I dug, and I went about four feet to water. I think that was in 1890. I am still using that well. I dug it the same time as the others—dug to water and then drove a pipe. The well was about three or four feet across down to the water level, and I have used that for household purposes throughout the years and am still using it. The water in that well has practically remained the same and is the same today, yes, sir. Yes, sir, I dug another well about 40 rods north of where I am living now or the well we just spoke of on the same land and went about six feet for water and constructed it the same as the others. That was three years ago."

A number of these witnesses testify that the water in their wells has not subsided. Now, I presume if there is damage done to the State of Kansas, or to its citizens, it is reflected in the crop yield or in the values of the land. Let us see what some of the witnesses of Kansas say in regard to their crops and land values. Mr. McBeth, of Garden City, says:

> "The values have somewhat increased, you might say, in the last ten or twelve months, and they have increased quite rapidly, yes, sir; oh, no, I wouldn't say that some of this land has not doubled and trebled in price in the last ten or twelve months. In some cases I suppose it has trebled. You take cheap grazing lands up on the flats, I suppose it is true they have doubled" (p. 7112, Record).

And then another witness, at Hutchinson, says:

> "As to the crops raised in the valley of the Arkansas river in Reno county during the last six or seven years, on the average, compared with those raised in any other six or seven years prior to that time, I think the crops have been good in the last three years. I think the crops have been an average and a little better."

Now, all through you will find that the witnesses concur in two things; first, that the crops in Kansas have not diminished; that the yield has not been lessened, and second, that the value of the lands has been largely enhanced, some of them putting it at twenty-five per cent. and others at fifty per cent., and in other localities putting it vastly in excess of either of those figures. Now, comparing the statements of these witnesses with the statements of counsel in their brief and in their petition, saying that the lands have been deserted and the crops diminished and the values destroyed, and taking the testimony of these farmers themselves, who claim their lands have been going up constantly in value, and that the crop yield is better, and that the flow of the stream is steadier and more constant, it seems to me the State of Kansas has utterly failed to make out a case.

I understand the rule to be that when one State sues another the evidence is not to be measured as it would be where one private individual sues another. Where a State brings a suit on behalf of its citizens against another State, it must show a serious and grave controversy; it must sustain the bill by evidence which is convincing and leaves no doubt in the mind as to the truth of the allegations which are made. On the other hand, when you come to review the testimony of the witnesses in this case, and find that practically one-half of the witnesses examined in Kansas are arrayed against the other half; when you are told by bankers, as we are told by Mr. Lewis, of Wichita, that he never heard any of the good farmers of Kansas complain about a diminuton of their crops, and by one of the bankers in Hutchinson, who tells you that he never took into consideration the supposed diminution of the flow of the river in Kansas in loaning money on lands, that the point had never been raised as an element affecting the security of land values, etc.; taking those persons who are supposed to know most about values and the prosperity and conditions

of the country, and finding that they testify uniformly to the progress and prosperity and constant development of the county, how does the State of Kansas make its case? It is simply made by the allegations of the bill, and not by the testimony.

There is one singular thing about this case that I desire to refer to, even though I may not have time to discuss other matters. You will find in reading the testimony of the witnesses in this case, and especially as it is presented in the brief prepared in chief by the State of Colorado, which is supplemented by these extracts I have made, that the real complaint about the loss of water in the Arkansas river began in the early '80's. Some of them put it in 1880 and 1881, and others in 1885 and 1886, and then there are others who testify in western Kansas to observing the loss not until 1890. Now, I want to call the court's attention to the fact that the State of Kansas, on page 98 of its brief, alleges that settlers in the Arkansas valley, in Colorado, learned the lesson of the value of irrigation from the people of Kansas, and that they carried their knowledge thus gained into the State of Colorado and applied it there. Now, if the testimony of these witnesses is true, that the lands in Kansas were languishing for want of water during the early '80's, and certainly before the year 1890, then, if these ditches in western Kansas failed for want of water at their inception, it was not due to the fact that ditches were constructed in Colorado. The evidence will tell you in this case beyond dispute that when these ditches were first built there was not sufficient water to fill them. I refer you again to the testimony of Mr. Juneau and of Mr. McBeth, the president of the First National Bank of Garden City, Kansas, who testified that when these ditches were constructed there was not enough water to operate them, and yet the great ditches of Colorado had not been built.

Mr. Justice PECKHAM: When were these ditches in Kansas constructed?

Mr. MILLER: They were constructed during the '80's. Most of them were constructed by the year 1886.

Now, if these ditches did not find water in the '80's, and the ditches in Colorado were constructed later, then the ditches of Colorado are not the cause of the failure of the ditches in Kansas. The evidence shows that the use of the water in Colorado has been a benefit to those ditches. Why? Because these same witnesses, whom I have mentioned, tell you that in later years the farmers who have settled the country have bought these ditches from the non-residents, who formerly built them as a matter of speculation, and have acquired the title to them, have cleaned them out, and have put them in good condition, and they are today operating them. One of these ditches has been recently purchased by Senator Swink, of Colorado, who is known generally throughout the West as the father of irrigation, and probably knows more about it practically than any other farmer in the country. After investigating these ditches and the supply of water, he invested thousands of dollars in the purchase of one of these ditches and the lands under it; so that you have today the spectacle of these same ditches, that were once abandoned for want of water, now in operation. This result bears out the testimony of the experts who tell you that the use of water in irrigation tends to replenish the stream and to equalize the current in low-water periods, and that the plowing up of the soil increases its power of absorption, and instead of the water falling upon the dry plains, as upon a hard pavement, and dashing off into the stream and disappearing in a few hours, to be of no use ever afterwards, it is retained and absorbed in the soil and is gradually released into the stream. Not only is that done when heavy rains descend on the plains, but we take the waters out of the streams and put them into

reservoirs, using the flood waters for that purpose. We take the natural flow of the stream and irrigate the lands with it, and a large part of that water returns again to the stream, maintaining a steady flow, which never had a possibility of existence previous to irrigation. There was nothing through that plain in the early days except the mark of a river except after heavy rains or the melting of snows. Today you have large perennial streams that are feeding the Arkansas, as testified to by numerous witnesses on the part of the State of Colorado.

I want to call the court's attention to the fact that there have been only 347 witnesses examined in this case, and that there were only 150 witnesses examined by the State of Kansas, and the balance of them were examined on the part of the State of Colorado and the United States Government. Seventy of those witnesses were produced by Kansas on direct examination and eighty in rebuttal, and I submit that the preponderance of the testimony of the witnesses of Kansas alone substantiates the fact that the value of her lands has gone up steadily; that the people are more prosperous and have plenty of money, and that their mortgages have been paid off in recent years, and that their testimony absolutely falsifies the picture of desolation and ruin that is painted in the complaint and in the brief.

Now, what is the position of the State of Colorado in this suit? I desire to say, in the first place, that the State of Colorado is not a consumer of water. There is not a particle of testimony here holding her responsible for the appropriation of any water. She does not own or operate any ditch or reservoir. The right to the use of the waters for irrigation precedes any legislation. The most that the State of Colorado does is to police the use of the water. Now, this court said in the case of Broder *vs.* Water Co., 101 U. S., 276, Mr. Justice Miller rendering the opinion:

> "We are of the opinion that the section of the act which we have quoted was rather a voluntary

> recognition of a pre-existing right of possession, constituting a valid claim to its continued use, than the establishment of a new one. This subject has so recently received our attention, and the grounds on which this construction rests are so well set forth in the following cases, that they will be relied upon without further argument."

My position is that if you obliterate from the statutes of the State of Colorado all the legislation concerning irrigation, that if you wipe out the constitutional provisions concerning the use of water, the mere fact that the arid region is settled and that the use of the running streams for irrigation is necessary for the maintenance and support of a population confers the right upon the people who inhabit the country to use it for the purpose of supporting themselves. Why, there is nothing sacred about this doctrine that the natural flow of the river must go down undiminished that gives it any force and effect in an arid country! The principle that gave rise to the riparian doctrine in a humid country sustains the right to irrigate arid lands within the watershed of any stream. Personally, I do not stand upon the doctrine of riparian rights. I maintain that the use of water, like air and like the soil, is for the purpose of maintaining a population, for the promotion of civilization, for the betterment of the world generally, and the same principle that says that the natural flow shall be preserved in a humid country so that industries may thrive and the settlements be protected and the highest results obtained, that same principle gives the broad use of the water for irrigation within the entire watershed of a river in the arid region. But it does not seem to me that a proper name for it is the riparian doctrine. The principle, however, allows the use of the water to that broad extent, because the use of water for irrigation in the arid region furnishes the greatest good to the greatest number. It is indispensable to the maintenance of a population. Surely the resources of nature are dedicated to the support of human and animal life.

There have been a series of congressional enactments concerning the use of the waters in the arid region ever since the year 1866. The most notable of these was the desert-land act of 1877. The early settlement of arid countries has resulted in this condition: The pioneers settled along the river and they took out of the river or stream enough water to fill a ditch probably a foot and a half or two feet wide and eighteen inches deep, and they obtained water enough to irrigate an ordinary farm of, say, 320 acres, and others came along and did likewise. Later on, when it became necessary to carry this water back farther from the river, because all the lands near the stream were taken up, it was necessary to form community ditches, as we call them in the West, where the neighbors would come together and organize and construct a ditch among themselves, and the ditch would be built so as to take water onto the lands farther back, and then later on probably we had speculators who were willing to invest their money in the construction of ditches, taking the water onto lands more remote, until we finally came to these great congressional enactments which are essential to the full development of the country. When they were adopted we must concede that the Congress of the United States knew the needs and the requirements of the country. They must have known that all the riparian lands were gone; that the lands to be reclaimed were remote from the river. When they passed the desert-land act, which allowed an individual to obtain title to 640 acres of land by securing water for it; when they passed the later act known as the Carey act, which allowed a corporation to segregate from the public domain a large tract of land upon condition that they were to reclaim it from its arid state and allow the settlers to obtain patent from the United States Government upon condition that they bought this water from the company that constructed the ditches and applied it to the land, and when they came along even later, in the year 1901 or 1902, and appropriated the proceeds of the sales of public lands in the Western States

to the reclamation of the arid lands, we must still maintain that Congress had in view the conditions of that country—that is, that they were reaching farther back from the streams for more lands all the time; that these great projects required large investments of capital, and it was necessary to carry the waters away back from the stream. And I want to call the court's attention to the fact that the witnesses of the State of Kansas were interrogated as to what objections they had made to the use of waters for irrigation in the arid region; the only two protests that appear in the evidence are the one by Mr. Murdock written to the Secretary of the Interior and another written to the Secretary of War. But there is not one syllable in this record as to any Senator or Representative of the State of Kansas having lifted his voice in the halls of Congress against any of this legislation, and yet it was well known at the time of its enactment that it was necessary to take this water far back, miles from the channel of the river.

Moreover, what is the meaning of the legislation that authorized the construction of canals across the public domain? Did Congress have in mind the application of water to lands adjoining the stream? Every citizen of the arid West knows that the early settlers needed no such legislative assistance. This court itself has declared that the right to use this water existed previous to any statutory legislation sanctioning it, and the entire series of legislative enactments by Congress providing for and promoting the reclamation of lands in the arid West was adopted without any memorial from the Kansas legislature in opposition to or any protest from the people. During its consideration and adoption the State of Kansas was represented in the Senate and House of Representatives, and the record of this case does not show a solitary instance when any Representative or Senator of Kansas objected to any of the laws enacted for the purpose of promoting irrigation and increasing to the fullest extent the irrigation of arid lands. In fact, we find a committee of Senators of the

United States came to Kansas in 1889 to investigate and learn what should be done by the United States in aid of irrigation. Kansas was not then seeking to limit the use of water to the borders of the Arkansas river. The testimony shows that the committee of Senators was there to see what could be done to reclaim the lands of western Kansas. Whether we view the direct testimony or contemplate the silence of Kansas during all the efforts of the arid West to build itself up, and especially during the time when millions were being invested in industries in the Arkansas valley in Colorado, we must conclude that Kansas did not feel her injury very keenly. There are no symptoms of acute suffering manifested in the evidence. I believe that after the court has fully considered the testimony in this case and reviewed such passages as attention has been called to, you will be convinced that there is a total lack of the kind of testimony required to sustain the grave issues made in the pleadings. I believe the fact that a large portion of the citizens of Kansas contradict the allegation of damages set up in this bill will convince this court that there is not the degree of wrong done to justify a State in bringing an action on the part of its citizens. When a State appears in court on behalf of its people the wrong for which it seeks redress must be general to the citizens similarly situated, and if it be true that there are only a few isolated cases of damages, and the real cause of these is not clearly stated or traced, it seems to me that the only thing to be done is to dismiss the suit.

If your Honors please, I desire to file these extracts as a part of my remarks to show from the witnesses of Kansas alone that there has been no damage done to the State or her people.

Motion granted.

ORAL ARGUMENT OF MR. JOEL F. VAILE FOR DEFENDANT COLORADO.

MAY IT PLEASE THE COURT:

I agree with my associates as to the effect of the evidence in this case. When you read that evidence I think you must inevitably and unanimously come to the conclusion that upon the facts, independent of any controverted questions of law, Kansas has not made a case to entitle it to relief in this court. I say this notwithstanding the very strong assertions of injury made in the opening argument here on the part of Kansas. I did not participate in the taking of this evidence, but I have read every word of it, and have analyzed it for the purpose of preparing the rather too voluminous brief on the part of the State of Colorado. In view of the allegations of the bill and the frequent contentions of counsel for Kansas, one cannot but be amazed, upon reading the record, at the absolute failure of proof of injury, either existing or threatened.

Counsel for Kansas have alleged not only in their bill, but recently in their briefs and in oral argument, the existence of conditions of desolation, of ruin, of devastation, throughout the State of Kansas. This evidence, on the contrary, discloses a radiant prosperity. Kansas has never been in better condition; the value of her lands and of her products and the prosperity of her people have never been at higher tide than now.

In the case of Missouri *vs.* Illinois, decided in this court, speaking of a controversy between States, you said:

> "Before this court ought to intervene the case should be of *serious magnitude, clearly and fully proved,* and the principle to be applied should be one which the court is prepared deliberately to maintain against all considerations on the other side."

If that rule is to be applied in this case, you will have no trouble after you once know the facts disclosed by this record. In that case this court also remarked that even in cases between individuals some consideration is to be given to the practical course of events. The practical course of events manifested in the development and operation of the irrigation system of Colorado and revealing its relations of benefit or injury to the State of Kansas will preclude any relief to the complainant, because it needs no relief; it has suffered no wrong.

But, if the court please, while this is my view as to the conclusions which this court will be bound to reach upon an examination of the evidence, nevertheless, in the present stage of the discussion, it is my duty to consider the questions of law which have been mooted. In doing so I shall assume that there is at least enough of injury shown to elicit from this court some decision of legal principles. I make that assumption simply for the purpose of argument, and as a basis for the discussion of the questions of law.

In my discussion of this case I shall present to this court, not such a line of argument as I might address to a constitutional convention, organized to formulate or change the fundamental law, I shall address you, not as if you were a legislature determining what the law ought to be, but I shall act upon the theory that in the trial of this case between these two States you sit in fact as a court to declare and administer that which is now the law.

In view of the fact that the subject of controversy relates to the waters of a river flowing through two adjacent States, and that those two States have different statutory provisions, and recognize different laws in reference to the control of running water, the question is at once presented as to what rule shall be applied in determining relative rights as between the two States in reference to the waters of the stream which pertains to both. Clearly the laws of Kansas cannot

control the citizens of Colorado, and it is equally true that the laws of Colorado cannot determine the rights of the people of the State of Kansas.

It has been suggested, with a good deal of plausibility, that the real rule of decision under such circumstances should be found in the common law ignoring the statutory provisions of both jurisdictions, and the contention is made on the part of Kansas that the common law before the creation of the State or Territory of Colorado prevailed in all that section traversed by the Arkansas river from its source to the southern boundary of Kansas. I shall not take any issue with Kansas upon that proposition. For the purposes of the discussion we may assume that the common law was the law of the land for all the territory now included in both States, and that the rights of settlers on the lower reaches of the Arkansas in Kansas were acquired under that common law, but I shall proceed to inquire as to what those rights were as applied to running water in a country of the character of that to which this controversy relates.

The whole history of the common law shows its adaptability to the conditions and wants of men under any of the various and peculiar circumstances in which they may be placed. Without any real change of principle it is flexible in its application, and the results of that application will be determined by the facts and conditions which invoke the law.

Assuming that the common law is to furnish us our rule of decision, then I unhesitatingly state the proposition that that common law, as properly applicable to the conditions in Kansas and Colorado, and as construed in the State of Kansas by its own supreme court, will preclude any recovery in this action on the part of the State of Kansas.

As a text from which to argue upon this subject, I shall take a recent decision of the supreme court of the State of Kansas, to which I ask the very particular attention of this court. That in the case of *Clark vs. Allaman*, reported in 80

Pac. Rep., 571, and also found in 71st Kansas Reports. In that case the scene of action is found in Wallace County, in western Kansas, very near the Colorado line, and in the valley of the Smoky Hill river. That river runs easterly almost parallel with and north of the Arkansas river. The particular locality in controversy in *Clark vs. Allaman* was almost immediately north of Syracuse or Coolidge, on the Arkansas river. It was in the same sort of arid country as that which characterizes the Arkansas valley in the extreme western end of Kansas. The Smoky Hill river, as shown in the opinion of court, is usually dry, although at flood seasons carrying abundant water. But in Wallace county there is a tributary to the Smoky Hill river known as Rose creek, which is a small but perennial stream. It rises some five or six miles south of the Smoky Hill river in two branches which, by their confluence, form Rose creek. The stream then flows a little east of north until it empties into the sands of the Smoky Hill river. The waters of the creek continue down the Smoky Hill river for some little distance until finally they are lost in the sands. Of course, in flood times the waters of the creek aid to swell the flood.

In the year 1875 or 1876 Mrs. Allaman, the plaintiff in the action, constructed a ditch with its headgate in the Smoky Hill river just below the junction therewith of Rose creek, and by means of that ditch diverted the waters that came from Rose creek onto her land. Her land is absolutely riparian to the Smoky Hill river. The court states the fact that the channel of the stream goes through her property. By the aid of this ditch Mrs. Allaman developed a farm of some eighty acres, converting an arid and worthless tract into rich and productive fields. Very soon afterwards a man named Robb, whose land was riparian to Rose creek, and lay just above the junction of the same with the Smoky Hill river, also took out a ditch and commenced to irrigate his lands a few months after Mrs. Allaman had commenced the process of irrigation.

Mr. Justice PECKHAM: Above or below?

Mr. VAILE: Above. All I shall now speak of are above Mrs. Allaman; she is the lowest in the flow of these waters.

Mr. Justice PECKHAM: It was on Rose creek?

Mr. VAILE: It was on Rose creek, yes, sir. All of the proprietors whom I named were on Rose creek except Mrs. Allaman; she was just below the mouth of Rose creek, and where the waters of that stream are still flowing into the Smoky Hill river. Much farther up the stream and near its sources, Mr. Clark, who was one of the defendants, had in the very early times built a very small ditch to irrigate three or four acres, but after the ditches of Mrs. Allaman and Mr. Robb were constructed, Mr. Clark then made additional and much larger ditches, bought new lands, expanded his holdings, and took out a large amount of water, that is, large relative to the size of the stream. In the meantime Messrs. Weisgerber and Grant and Kyner and Williams took out ditches from this same stream, their headgates being at points on Rose creek above Mrs. Allaman and Mr. Robb, but below Mr. Clark. The record reveals one peculiar circumstance, and that is that Mr. Grant's land was not riparian or did not touch Rose creek, but as the supreme court of Kansas does not mention that fact, I assume that the circumstance was simply overlooked, so I make no point on that whatever.

We have then a case here of successive ditches taking water from Rose creek. Now, Mrs. Allaman, some three or four years ago, finding that these ditches which had been built subsequently to her approbation and use of the water, had destroyed her supply, went into the courts of Wallace county and brought an injunction suit to restrain these upper riparian proprietors from diverting and using the water which had been accustomed to come down to her. None of the parties claimed, under statutes of Kansas relating to the appropriation of water, although statutes had in comparatively recent years been enacted in that State. The court below, however, in deciding rights, utilized the principle of

priority of appropriation, and gave to Mrs. Allaman, according to her priority, substantially the full flow of the stream at low water to the detriment of those above, who were later proprietors.

The case, then, was carried to the supreme court of the State of Kansas. That court reversed the case and taxed the costs against Mrs. Allaman. Now, it is that decision to which I wish to call your special attention, and before referring to the announcement, which the court makes of the law applicable to the facts, I ask your attention to one particular proposition or fact, which the court specifically states. Speaking of the building of the later ditches, the court says:

> "As the area under cultivation was extended year by year, an amount of water correspondingly larger was *necessarily* diverted from Rose creek and *consumed.*"

The fact so stated is to be borne in mind, when we consider the law as announced by the supreme court.

Before stating what the legal conclusions of the court were, I would suggest, in passing, that at the time that suit was brought on for hearing in the supreme court of Kansas, the case of *Kansas v. Colorado,* which we are now arguing, was pending here in this court. Thereupon my friends who sit now before you, representing the State of Kansas in this suit, appeared in that case as friends of the court. They were permitted to file briefs. The opinion of the supreme court was rendered in accordance with their contention that the common law should apply, and they now tell us very frankly in their briefs and argument, that the opinion of the supreme court of Kansas will be of very great assistance to this court in coming to its conclusions in this case. The opinion of the supreme court of Kansas in the Allaman case was very largely taken up with tracing the march of the common law. I shall not follow the court in that march. I shall not take issue with any proposition bearing upon

that subject, but I shall ask you to consider what the supreme court of Kansas considers to be the common law in reference to riparian rights in the waters of streams.

The supreme court of Kansas says in that case:

> "The authorities are unanimous to the effect that the use of water for irrigation is one of the common-law rights of a riparian proprietor."

If so, then from the beginning of time in Kansas, even when Kansas included the territory of Colorado, irrigation was a recognized existing riparian right, existing by virtue of the common law, as that common law prevailed in the jurisdiction of Kansas. The supreme court, of course, could only declare the law. They did not by this Allaman decision create it. If it was the law when they so announced it, it had been the law from the time of the adoption of the common law in the State or Territory of Kansas. In support of their proposition they cite a Massachusetts authority of very high repute, in a decision of Chief Justice Shaw. I will read only two or three passages which are quoted by the supreme court of Kansas. Chief Justice Shaw says:

> "Each proprietor has a right to a just and reasonable use of it [the water] as it passes through his land, and so long as it is not wholly obstructed or diverted, or no larger appropriation of the water running through it is made than a just and reasonable use, it cannot be said to be wrongful or injurious to a proprietor lower down."

Kansas accepts this rule from Massachusetts and adopts it, and a little further on, still quoting from Chief Justice Shaw, it is said:

> "That a portion of the water of a stream may be used for the purpose of irrigating land we think is well established as one of the rights of the proprietors of the soil along or through which it passes. Yet a proprietor cannot, under color of that right, or for the

> actual purpose of irrigating his own land, wholly abstract or divert the water course, or take such an *unreasonable* quantity of water, or make such *unreasonable* use of it, as to deprive other proprietors of the substantial benefits which they might derive from it if not diverted or used *unreasonably.*"

It will be observed that by this proposition so announced in Massachusetts and adopted by Kansas, the upper proprietor has a right of actual use—an actual use for purposes of irrigation, the limit upon that use being that it shall be reasonable. Of course, reasonable for the purposes contemplated and recognized as lawful. To the extent of that reasonable use by this authority, the upper proprietor has the right to avail himself of the water without regard to the consequences to the man below. The substantial benefits which the person below is entitled to receive, are those which he would have if the upper proprietor had not diverted or used the water "unreasonably." Further on in the Allaman opinion, after quoting from various authorities, the supreme court of Kansas in its own language says:

> "It might occur that a riparian proprietor could not irrigate his land successfully, but he could not on that account deprive others more advantageously situated of the privilege, *provided, of course, his own reasonable uses of the water were not impaired.*"

Here again, in the very language of the supreme court of Kansas, the prior first right of the upper proprietor, without regard to the consequences to the lower proprietor is recognized and confirmed to a certain extent of reasonable use. This principle, we will find, as we go on, must run through the whole subject, whether riparian rights be considered as determined by international, state or general law.

I will call attention to two other short passages, and then I will leave the subject of this decision. We find laid down the proposition that irrigation is a common-law riparian

right. If so, to what extent laterally from the edge of the stream does that right extend? This becomes a very important question when we consider the subject of reasonable use. Well, the supreme court of Kansas gives us information upon that subject. That court quotes approvingly from *Farnham on Waters,* to this effect:

> "All conceptions of riparian land lead to the conclusion that it is land which is tributary to and lying along a watercourse, and *as soon as the divide is passed,* and the watershed of another stream is reached, the land cannot be regarded as riparian with reference to the former stream, and since the right to irrigate depends upon the land being riparian, the destruction of the riparian character destroys the right to irrigate."

But, under this authority, that right is not destroyed until the divide is passed. A similar negative limitation upon the extent of the riparian right, is shown in various California cases—a limitation to the effect that the riparian right does *not* extend *beyond* the divide. But the supreme court of Kansas does not leave it in this merely negative form, but gives us an affirmative opinion upon the subject. Under the quotation made by the court from Mr. Farnham, certain maximum limits had been suggested, to wit, the limit of the divide on either side of the stream. Now, says the supreme court of Kansas:

> "*Within these limits* the principles of equality of right announced above, should control the use of water for irrigation purposes by those whose land is affected by the presence of the stream, irrespective of the accidental matter of governmental subdivisions of the land."

And to give emphasis to this extension of the right, and that it may be to a great distance from the edge of the stream, the court adopts the following language:

> "It would seem therefore that any person owning land which abuts upon or through which a natural stream of water flows, is a riparian proprietor, entitled to the rights of such, *without regard to the extent of his land* or from whom *or when* he acquired his title."

The court will observe that the element of priority of time in the use of water, or the existence of a vested right in the continued flow of water on the part of a lower proprietor, is not in the slightest degree recognized as against this *increased* right of the upper proprietor by reason of the extension of his lands laterally from the stream. There is no recognition of a vested right in a lower proprietor to be protected when the court says that the *upper proprietor* may increase his use of the water by the acquisition of additional lands extending from the stream toward or to the divide. *His* rights may be exercised "without regard to the extent of his land or from whom or when he acquired his title."

Now, when we find that the rights of an upper proprietor have this very wide and increasing scope, what have we, under the common law as announced in Kansas, for the protection of the lower proprietor? In the case referred to, poor Mrs. Allaman had thought that she was entitled to some rights in the flow of these waters by reason of her long use of the same. For twenty years and more she had been using the waters of Rose creek for the irrigation of her lands. She thought she had vested rights. But observe how summarily the supreme court of Kansas disposes of the proposition. That court says:

> "The judgment in favor of the plaintiff cannot be justified on the grounds of prescription. Her acceptance and use of water flowing down Rose creek to her land, involved the exercise of a right which she herself possessed without encroachment upon the rights of upper proprietors, and they lost all property in the water when it left their land. Hence her conduct lacked the adversary quality necessary to the foundation of prescriptive rights."

I ask the special attention of the court to the fact of this recognition of the rights of *upper* proprietors, and to the fact that the Kansas supreme court here distinctly finds that any rights of the lower proprietor are subject to the exercise of the rights of the upper proprietor to the full extent to which those rights exist; and this, after holding that the rights of the upper proprietor include irrigation and may be increased in scope by the increase of the acreage owned by such upper riparian proprietor. Although originally he may have held a strip only a rod wide along the stream, but afterwards buys adjoining land till it stretches out a mile or five miles from the edge of the stream, his right has grown correspondingly, provided only he has not passed the divide that separates the drainage of the stream from that of an adjacent stream; and the lower proprietor holds all his rights to the flowing waters of the stream *subject* to this increased right of the upper proprietor to the use of the waters of the stream.

I suggest, if the court please, that this decision of the supreme court of Kansas at once answers the whole argument, made by counsel for Kansas, as to vested rights of settlers on the lower reaches of the Arkansas as against proprietors in Colorado along the upper reaches of the Arkansas. The early settlers on the lower reaches of the Arkansas river in Kansas, under the law of Kansas as announced by its own supreme court, held only such rights as would accrue to them without encroachment upon the rights of proprietors up the stream, and there has never been a time when there was an adversary relation as between the upper and the lower proprietors which would entitle the lower proprietor to assert any vested right as against the upper proprietor.

Mr. Justice HARLAN: Does that decision cover this case? I believe you said a riparian owner in Kansas may irrigate.

Mr. VAILE: Yes, sir.

Mr. Justice HARLAN: Suppose a man owns a farm of ten acres and in order to irrigate the whole of that land he prac-

tically takes all of the water from the stream and leaves none for a lower proprietor. Does the decision cover that state of facts?

Mr. VAILE: It covers it this far, your Honor, that the extent of his reasonable use——

Mr. Justice HARLAN: Well, reasonable——

Mr. VAILE: Reasonable, not in the sense of territory it shall cover, but reasonable in the sense of the necessity for use upon that territory, however extended it may be. This is illustrated by the statement of facts to which I again ask the attention of the court. The very facts that were before this court, and upon the basis of which these principles of law were announced, where the court said in that case: "As the area under cultivation was extended year by year an amount of water correspondingly larger was *necessarily* diverted from Rose creek and *consumed.*" Certainly, the court is not here considering that such consumption of water necessarily diverted was an unreasonable use of the water. It is recognized as being within the rights which the court is announcing as pertaining to the upper proprietor.

We are bound to come to the conclusion that this decision of the supreme court of Kansas is to the effect that under the common law the riparian right of the upper proprietor includes the right to divert the water for use upon his land to the extent away from the stream that he may own land washed by the stream, and involves the possibility that in that use, appropriate to that territory, and not wasteful in itself, the water of the stream may be entirely consumed.

Mr. Justice WHITE: When we speak of the common law we speak of the common law of England, do we not?

Mr. VAILE: Of course, with its origin in England, yes, sir.

Mr. Justice WHITE: Well, when we speak of the privileges of the common law we mean the common law of England as derived from the mother country and as prevailing there at the time of the separation. Now, we do not speak of any law which may have arisen which is wholly in conflict with that

law. Do you understand that under the common law of England—now, here is a stream. A owns one acre on the stream, and the watershed is fifty miles wide. He goes twenty-five miles from the river and occupies ten thousand acres. Under any conception of the common law, with riparian rights as property rights, would a man who has a one-mile front have the right to take all the water out of the river, provided it was kept within the watershed, to irrigate ten thousand acres of land twenty miles from the river? Is that what this decision holds?

Mr. VAILE: It does.

Mr. Justice WHITE: Have you any idea that that was at all consistent with the common law of England?

Mr. VAILE: I do not have the idea, if your Honor pleases, that you will find any English decision that in degree reaches any such magnitude——

Mr. Justice WHITE: Will you find any English decision that would not necessarily, in substance and effect, hold that such a rule was violating the common law of England?

Mr. VAILE: I do not think that the English decisions are in principle inconsistent with this rule. I shall presently consider that subject further in connection with a discussion of necessary uses to supply natural wants as these terms are used in the common law.

Mr. Justice WHITE: Do not understand my question as being antagonistic to your theory of the case. It don't imply that.

Mr. VAILE: I appreciate what your Honor says, and the court will understand that I am not contending that the common-law rule, either as construed in England, or in Kansas, determines our rights. I am, however, inquiring what will be the effect upon rights in this particular case if the common-law rule as construed in Kansas—and as construed generally in those arid States that apply the riparian doctrine—should be adopted as the rule of decision in the case we are now discussing.

Mr. Justice WHITE: I put that question for this reason. In the Bridal-Veil case, a man had acquired a tract of land from the Government. He said: By the common law of England water was a part of my land as a riparian owner, as much as the trees and the grass and the rocks and everything which pertained to it; and now the law which allows a man to take all that water away to irrigate another piece of land deprives me of my property without due process of law, for private use, and you cannot do that under the Constitution of the United States. Now, suppose in this case that you put, decided by the court of Kansas, that the Federal question had been raised, the right of property under the common law had been cited and the court had rendered this decision and the case was here on writ of error, and it was conceded that the common law controlled, would not a reversal of that judgment necessarily follow from the fact that that court had taken away the trees and the grass from that man's land and given it to a man who used the water to irrigate land twenty miles away from the river?

Mr. VAILE: If the court please, I am not willing at this stage of the argument, and I may say at any stage of the argument, to answer that question affirmatively, because of a fact which I shall insist upon as I proceed, and that is that the *principle* of the common law involved in this discussion does not reach the full measure of its possible scope in the application made by it in English decisions and facts arising in English cases. The principle itself is broad enough to apply to conditions that never existed in England, and could not be involved in any English decisions, and yet the principle in its new application is still the common law, the same good old common law all the time. I will pursue that idea further. But before doing so let me make the suggestion that I consider that this decision in the State of Kansas is in full line with the doctrine in those semi-arid States which have found it absolutely necessary in some way to permit water to be used upon lands away from the bank of the

stream, who have found this to be an absolute necessity of their people. In permitting it they stretch what had been the common and ordinary expression of the limitations of the common-law riparian rights so as to fit the cases which they had before them. I may say, in passing, that I think that even in the semi-arid States it would be better to grasp the nettle boldly, as the really arid States for the most part have, and say that whether or not justified by the common law, yet common sense demands, and the necessities of the people require, certain rules for the equitable distribution of running water, which may be best expressed in the form of statutes regulating distribution and use. In the semi-arid States that I have referred to, they have attempted through the riparian doctrine, which they still adhere to as a rule of decision, to reach a result practically similar to that which is reached by statutory enactment in the really arid States.

Mr. Justice BREWER: You say that would be the doctrine of common sense in the arid States?

Mr. VAILE: Yes, sir.

Mr. Justice BREWER: Well, assume that that is true. When a controversy comes between an arid State and a humid State, what is the common sense of the——

Mr. VAILE: The common sense, as I think, would be to utilize certain fundamental principles of the law of running waters as applied to the conditions of both States.

Mr. Justice BREWER: And a departure from the rules established at common law?

Mr. VAILE: Not necessarily, and, to the extent for which I am contending, not at all. I maintain that the common-law rule recognizes and enforces a right of the riparian proprietor to certain uses of the water. That for certain necessary uses, to satisfy natural wants, the right of use extends even to the consumption of the entire stream; that this is true whether the country be humid or arid; that the common law as so understood furnishes a sufficient common rule for a decision of the rights of both States, and that statu-

tory provisions relating to distribution of water all rest upon this common-law right to its use, as I hope to further develop as I proceed.

Mr. Justice McKENNA: What would you say, if, in applying your common-sense doctrine to an arid State you made that a humid State, or in effect made it a humid State, and made the humid State an arid State?

Mr. VAILE: If that would be the effect of it?

Mr. Justice McKENNA: Yes.

Mr. VAILE: If that has been done——

Mr. Justice McKENNA: I do not say it has been done.

Mr. VAILE: If that were a physical possibility, then under the principles I am presenting it would result from the extensive utilization of the water by the upper proprietor, and whether that is rightful or wrongful would depend upon this same rule we are discussing as to what constitutes a reasonable use by such upper proprietor for the purposes contemplated by the common law. I do not lay down the principle that common sense forms in itself alone a rule of law, although I submit it should always accompany and guide it, but common sense may well require the enactment of statutory provisions for the equitable distribution of water among those who are in a position to utilize it, and the upper proprietors of an interstate stream, acting collectively through State authority may surely distribute as they will among themselves that right which collectively they hold in the stream as against proprietors lower down.

Mr. Justice WHITE: Then is not your position this, Mr. Vaile. Is not the logical outcome of your argument this: That there was a proprietorship in the water in the sense of trees and land and grass, etc., to use the terms of the common law, and that is, in all times and in all countries the use of water was the subject of governmental regulation and it would have been valid in England to regulate it by act of Parliament; there was nothing in the common law interfering with the right of governments in this country by statute

to regulate the use of water incident to the wants and necessities of their people and, therefore, in doing so no private right was taken away.

Mr. VAILE: I thank your Honor. I will say that further on in the sketch of my argument I have a proposition which I will state now, and that is that the settlers on the lower reaches of the Arkansas river took their rights subject to the presumed fact that states would be formed west of them on the Arkansas river; that the people who should live in those states would make laws, and that the laws they would make would be adapted to their necessities growing out of their soil and climate. It appears to me that this proposition which I had contemplated discussing is exactly the idea which is now suggested by your Honor, and if my time will permit I shall develop it more at length.

Any use of water for irrigation involves the idea of diversion from the stream. It must be conceded that irrigation to some extent is a common-law riparian right. Then the question arises, what is the limit measured away from the stream for the exercise of this riparian right under the common-law rule. Can any judge or lawyer lay down a universal rule which shall designate such limit? I submit that it cannot be done. The right usually turns upon title. If a man's land borders upon the stream and extends back two or five or ten miles within the drainage of the stream, his riparian right runs with his land. If his land does not in fact touch the stream, then under the riparian rule, although it is within a rod of the water, he has no riparian right at all. Now, what I wish to insist upon is that in this case you cannot possibly apply any rule which has relation to titles. One of the counsel who argued this case before this court at the time of the hearing on the demurrer expressed the matter very happily, as I remember, in comparing the Arkansas valley in Kansas and Colorado respectively as two great farms. Here is Colorado owning all the country in the valley above the State line and Kansas owning all below. I

think that is an excellent illustration and a very fitting one for this simple reason, that there is involved in this case no question of individual rights or of special proprietorship along the stream. We have to take the situation in gross, and we have to consider this case with the maximum possible limit of riparianship. In that view, and it is absolutely the only view that can be taken of the issues in this controversy between these two States, all lands are riparian within the drainage area of the Arkansas river, whether in Kansas or Colorado; there is no other rule that can be applied to the facts of this case. We have, therefore, a case where the riparian lands extend on either side of the stream to the divide that separates the drainage of the Arkansas from the drainage of other streams. And the question simply is, under such circumstances, what are the rights of the upper proprietor in the use of the waters. I ask the attention of the court to a principle which constitutes a factor, if I may so say, in the riparian doctrine as to the use of running water. It is a principle which is recognized in the common law of England, and in all other countries where the common law applies.

It was expressed in the case of *Miner vs. Gilmour*, 12 Moore, P. C., 156, as follows:

> "By the general law applicable to running streams, every riparian proprietor has a right to what may be called the ordinary use of the water flowing past his land; for instance, to the reasonable use of the water for his domestic purposes and for *his cattle*, and this without regard to the effect which such use may have, in case of a deficiency, upon proprietors lower down the stream."

I call the attention of the court to the last clause, but I shall presently consider the question of necessary and reasonable use as a separate subject of discussion. Within a certain range, within some range, under the riparian doctrine in the strictest form in which it was ever announced in Eng-

land there are some uses for which the water may be used and entirely consumed, and such use and absolute consumption of the water, leaving none to flow to the man below, will under some cases as recognized by the common law be sustained as within the right of the upper proprietor.

Lord Romilly used very similar language when he said, as cited in our briefs:

> "As to riparian proprietors there is no question, I think, about the law upon the subject * * * that a riparian proprietor has the paramount right to take what water he likes from the river for usual domestic purposes. I do not say how widely the term 'domestic purposes' may extend. Unquestionably it would extend to culinary purposes and to purposes of cleansing, washing, the feeding and supplying of an ordinary quantity of cattle, and so on."

In Alabama many years ago the doctrine was similarly expressed in these words:

> "That each riparian proprietor has the right to use water which flows from or through his lands for all ordinary purposes, and for the *gratification of natural* wants, even though in such use he consumes the entire stream." (Stein *vs.* Burden, 29 Ala., 127.)

The court in that case was expressing the common law. The same thing has been stated in Kentucky.

Mr. Justice WHITE: Have you a North Carolina case?

Mr. VAILE: I do not know that I have. I have before me citations from Kentucky and Alabama. In Kentucky the court, among other things, said:

> "The primary use of water is for natural and domestic purposes, and each proprietor of land through which it flows may use as much of it as is necessary for those purposes, even if it be entirely consumed in the use." Anderson *vs.* Cincinnati So. Ry., 86 Ky., 44.)

Now, if the court please, these are but statements of a fundamental common-law principle, often ignored, indeed, in the statement of the riparian doctrine, and yet constituting part of it, essential to it, and always relating to the rights of the proprietor whom the water reaches as against some lower proprietor upon the same stream. It is a fundamental rule of the common law that for some purposes, and to some extent, the riparian right involves the right of consumption and absolute destruction of the water to such extent that there is none left to go to the proprietor below. In its very nature this is a right that pertains to him who is up the stream as against one who is below the stream. It is not a right which in its nature can be asserted by the one down stream against the one who is up stream. It is a right which results from superiority of geographic position in reference to the stream itself, and we shall find that this principle, growing out of natural position, is in the very nature of the subject a necessary factor in this discussion, and, as I respectfully submit, when all the facts are considered, is a controlling factor and will furnish conclusive reasons why, in the present case, Kansas, the lower State, cannot maintain its present contention against Colorado, the upper State upon the river. I lay down the proposition, if the court please, that in the application of water to satisfy natural wants by the very laws of nature the upper proprietor has the better right.

Now, with this proposition, which I think is clearly established at common law, as a basis from which to build up our argument, how far does the rule extend in the use of water for irrigation in an arid country, always bearing in mind that the principle is a common-law principle. The question is as to how you are to apply that principle under the conditions which you meet in an arid land. Let us, however, first see some specific applications of the rule in humid countries. In Massachusetts it was held that the natural right of the plaintiff, the lower proprietor, to have the water

descend to him in its pure state, fit to be used for the various purposes to which he might have occasion to apply it, "must yield to the equal right in those who happen *to be above him*. Their use of the stream for mill purposes, *for irrigation*, watering cattle, and the manifold purposes for which they may lawfully use it, will tend to render the water more or less impure. Cultivating and fertilizing the lands bordering on the stream, their occupation by farm houses and other erections will unavoidably cause impurities to be carried into the stream. As the lands are subdivided and their occupation and use become multifarious these causes will be rendered more operative and their effects more perceptible. The water may thus be rendered unfit for many uses for which it had before been suitable; but so far as that condition results only from reasonable use of the stream in accordance with the common right the lower riparian proprietor has no remedy." (Merrifield *vs.* Worcester, 110 Mass., 216.)

There was a singular case in England, where a lower proprietor had for seventy years had almost the exclusive enjoyment of a small water course for the supply of his premises. After awhile a riparian owner further up the stream built some new houses upon the banks of the stream and the water from the stream was taken to supply those houses. It was purely a domestic use, but a greatly increased use, a use which had not existed before. It deprived the lower proprietor of that which he had previously enjoyed. The lower proprietor sought relief and could get none. No legal right of his was invaded. That is the case of *Roberts vs. Richards* (50 L. J. N. S., 297). Now, as I have already suggested, in the State of Massachusetts, speaking of the possible pollution of the stream, it was held that so far as that condition results only from the *reasonable use* of the stream in accordance with the common right, the lower riparian proprietor has no remedy. Now, how is irrigation to be considered as bearing upon this subject? I respectfully submit that if there ever was a case where necessity for the use of

water exists in its very strongest form, it will be found in the conditions in the valley of the upper Arkansas.

Mr. Justice HARLAN: Do you mean in Colorado?

Mr. VAILE: Anywhere in that valley. In other words, where the whole question is as to whether a district of country shall be populated or not populated, whether men shall live there or abandon it, turns upon the question of the use of the water of the stream, I submit that no higher necessary use can be found. The watering of a few cattle is an absolutely insignificant thing compared with the use of that water to nourish the plants that give life and prosperity to a great people. This certainly is true. If Colorado were, as asked for in the bill of Kansas, to be deprived of the use of the water in the upper reaches of the stream, in that part of the stream flowing through Colorado, such deprivation of the use of the water would have the effect of absolutely destroying the industries and development of that country upon which now depend the living of 175,000 people. I do not mean that all that population would die as the result of such deprivation of the waters of the Arkansas. I do mean that they would have to abandon their homes and the country which they have developed and go to some other country to live; they could not live there.

Mr. Justice HARLAN: What is the proof on the point as to whether or not there is any waste of the water in irrigating in Colorado?

Mr. VAILE: On that subject, if your Honor please, the proof is complete against any contention of waste. There is not a suggestion in the evidence submitted by the State of Kansas of any wasteful use of water except as that may be argued from the extent of the use in the magnitude of the territory that is irrigated. There is nothing suggested as to wastefulness of methods of use. Mr. Elwood Mead, who is more familiar with the subject, I believe, than any other person living, and who knows thoroughly the conditions in all the various arid States, says that the method of conserva-

tion and distribution of water in Colorado is as good as can be found anywhere. He thinks, indeed, that the farmers after a time will be able themselves to get a greater service out of a given amount of water, but he gives the very highest praise to the methods employed in Colorado irrigation. There is no suggestion of waste. I will frankly say that if waste were proved such waste ought to be restrained and that this court can restrain it. We do not ask on behalf of Colorado for any privilege of abusing the right which we claim. We readily concede that after the satisfaction of our own necessities, which are vital to our occupancy of the land, that the surplus should go to our neighbor below to enrich his lands and give him prosperity, and it does so.

Now, if the court please, I find that I have only twenty minutes left of my time, and my argument is but just begun. I shall have to go over certain other propositions quite rapidly. I would suggest, however, before leaving the subject, that in various courts the fact that irrigation must in an arid country rank as a necessary use in the application of the common-law riparian principle has been distinctly affirmed. In our brief we cite a number of cases, and especially from the State of Texas, to the effect that the use of water for irrigation of lands for the support of the people is one of the most necessary uses. In Illinois, away back in the early days, as reported in 3 Scammon, there was a discussion of the right of use of running water, and after discussing various necessary uses which pertain to both humid and arid countries, the writer of the opinion said:

> "In countries differently situated from ours, with a hot and arid climate, water doubtless is absolutely indispensable to the cultivation of the soil, and in them, water for irrigation would be a natural want" (Evans *vs.* Merriweather, 3 Scam., 492, 495).

This utterance was made in a humid State many years ago under the common law. It illustrates my contention

when I insist that without a change of principle the common law will adapt itself, *as* common law, to the conditions which invoke its application.

Mr. Justice BREWER: Is that a decision as to the condition in Illinois or an expression of opinion?

Mr. VAILE: Let it be admitted that it is *obiter*. It was not necessary to the decision. It is simply the opinion of a single judge, but a wise one.

Now, independently of all this common-law doctrine of riparian rights as such, there are certain basic principles which I think entirely control the whole subject. These principles, although they lie in the very alphabet of the common law as to running waters, and are familiar to all, may be properly stated for the purpose of reminder and reference, although almost axiomatic in their character. Justinian says: "By natural law the following things are *common to all*—air, *flowing water*, and the sea." Later, Blackstone expresses the same idea when he says: "Water is a movable, wandering thing, and must of necessity continue *common* by the law of nature; so that I can have only a temporary, transient, usufructuary property therein." Streams are intended for the use and comfort of men. Now, if the court please, I make a proposition which I think is axiomatic,—that that which is common to all may be lawfully utilized by the first possessor to the full extent of his own reasonable necessities before he permits it to pass to another,—and that rule, that axiom, in reference to the control of common property, applies to the case of running water in streams.

Blackstone himself so applies it, for, speaking of what he calls common things, such as light, air, and *water*, he says:

> "They still belong to the first occupant during the time he holds possession of them, and no longer. Such, among others, are light, air, and water, which a man may occupy by means of his windows, his garden, *his mills and other conveniences*. All these

things, so long as they remain in possession, every man has a right to enjoy without disturbance."

If the court please, I submit these are principles, foundation principles of the common law. They are not the development of rules in an arid country, or peculiar to Colorado, but Colorado is entitled to the benefit of their application. They underlie the whole structure of the law of running waters. They constitute the basis of all rights, and under these principles it is apparent that the man up the stream to whom the water first comes has the prior right to its use in the absence of some statutory regulation which modifies the character of that use, or its extent or distribution. His right to the water comes just as the whole doctrine of riparian rights has developed, as now held by the authorities, as a right existing in nature; but so existing in nature, it belongs first to the man on the upper reaches of the stream, because to him the water first comes.

Mr. Justice McKenna: A right to the consumption of it all?

Mr. Vaile: To the consumption of it all, if so required by reasonable necessity. Not to consume it wastefully, not to divert it into some other drainage so that it shall not pursue its natural course to those below.

Mr. Justice McKenna: Well, assuming a use of it and not an abuse of it, then going back again to the question I put to you, could Colorado—say she was a desert—change herself into the very opposite of a desert and make a desert State below her?

Mr. Vaile: If your Honor please——

Mr. Justice McKenna: Now do not understand me as expressing any opinion. You started with the statement that you were going to argue the case upon the supposition that Kansas had suffered damage.

Mr. Vaile: Certainly. So I want to maintain that position throughout this argument, for the purpose of the discussion. Now, I call attention to a fact which has not been

specifically stated as a proposition, which I think ought to be.

Mr. Justice McKENNA: Does there not come in there that element contended for by the United States, that this governmental power to pass a statute must necessarily be the United States?

Mr. VAILE: No, sir, not at all, I should say as to your last question. I was going to say in answer to your first question (I will, perhaps, touch upon both of them before I get through), I was going to say that there are natural limitations to the right of use of water under the principles I have just suggested. Nobody would ever claim that the laws of nature themselves may be lawfully overturned, and that water may be properly taken out of the drainage in which it flows. It may readily be admitted that the maximum right which by nature belongs to the first possessor of the water is to use it within the limits of the drainage of the stream. Bounding such drainage are natural barriers beyond which any common-law right cannot extend. The right may be limited within that drainage according to circumstances and conditions. It cannot go beyond. That is all for which I am insisting. It is, of course, a physical impossibility to change climatic conditions over a great extent of country by the process of irrigation of the lands.

Mr. Justice McKENNA: Of course, that is an extreme supposition which I put to you.

Mr. VAILE: Now, if the court please, my next suggestion is this, that as to all these matters, the settler upon the lower reaches of the Arkansas river came there bound by certain conditions. He was supposed to know the law; he was supposed also to know as a physical fact that the stream that flowed past his land came to him from an arid country; that its sources were away in the Rocky mountains; that he received its waters after they had passed through or while they were passing what we all knew in our schoolboy geographies as the Great American Desert. The very heart of the Great American Desert was where the Arkansas river is today in

western Kansas. The settler knew where the river came from. He knew, therefore, that as States were formed to the west of him on that river there would be special necessities for the use of water by reason of the character of the country from and through which the water came. At all times the law has been that the necessities of people resulting from climate and soil involve the necessity of laws applicable to their conditions. This court, in *Clark vs. Nash,* expressly stated this principle in these words: "This court must recognize the difference of climate and soil which render *necessary* these different laws in the States so situated." This court, in making that statement, was not creating law; it was declaring it, and declaring law that was of universal application growing out of the necessary accompaniment of natural conditions. Now, the history of the country, the conditions of its growth, and the relations of mountain and plain, all advised the early settler on the lower reaches of the Arkansas that States would be formed as the country became populated along the upper reaches of the stream. He was bound by the presumption that the inhabitants along the upper reaches of the stream would utilize the waters of the stream to the extent of their reasonable necessities. Now, if, as we have contended, the right to irrigate arid lands so as to make them habitable and to support a people is a necessary use, if the land was to be occupied, and we must go on the theory that it was intended for occupancy, and that it should be occupied, then the irrigation of those lands was a necessary use. The right to make such use of the waters of the stream, if it existed at all, would extend as far within the drainage of the stream as beneficial irrigation could be applied; and the people who settled upon the lower reaches of the stream must have taken all of their rights in the waters of the stream subject to at least the equal common right of those who should locate farther up the stream, without regard to the time when they should there locate. That, surely, is the rule established in the Allaman case. I submit that it is the rule at common law, and that the Allaman

case in that respect correctly decided that on a running stream the man down the stream holds his rights in the waters subject, at least, to an equal common right in the proprietor who may then or thereafter occupy the upper reaches of the stream. Now, apply this rule in the practical development of a country originally uninhabited and subsequently the abode of a large population. On the day the settler in Kansas takes up his land on the banks of the stream there are, all told, a thousand people between the Colorado State line and Leadville who utilize the waters of the Arkansas. The settler down in Kansas has certain rights to the waters as those waters come to him. The water is practically undiminished, practically unpolluted, simply because there are so few consumers above, but after a while the one thousand people become one hundred thousand people along that stream in Colorado. Each one of the hundred thousand has the same rights that the original thousand had, or that the original first one had. Each has that same right in common, but the increase of the numbers who may enjoy the common right increases necessarily the legitimate consumption and use of the water; and the rights of the early settler on the lower part of the stream have always been subject to that use by the upper proprietors under any theory of vested rights relating to the subject. Now, suppose there were no State line separating the upper Arkansas from the lower. But suppose that people had come in and were utilizing the water under the very principle of the Allaman case to the full width of the irrigable portion of the valley, then the people on the lower part of the stream would be deprived, and rightly and legitimately deprived, of the use of the water of the stream to the extent that it had been consumed by those exercising an equal right above. I am asking you to suppose that under one common jurisdiction, and we may call it a Kansas jurisdiction, the whole valley from the sources of the stream to the Oklahoma line had developed just as it is now known to have developed, with the same extent of canals, situated in the same geographical position

and utilizing the water in the same way, manifestly all the upper proprietors would, under the Kansas doctrine, have the riparian right to use the water out to the divide, and the lower settler would hold his rights subject to these rights of use above.

Now, that being the case, a line is drawn and a new jurisdiction created; Colorado is cut off, and she proceeds then to make a new regulation not affecting Kansas, but affecting the distribution of the water within her territory among her own people. She has the right to do that. This court has said so. She has the right to make that distribution. Now, it will be observed that the amount of water which Colorado does take under its existing laws does not and cannot exceed the amount which it would have a right in the aggregate to take under the riparian theory as decided in the Allaman case, and, as we have attempted to show, properly decided under the common law. Is that proposition not absolutely sound? If the Kansas riparian doctrine as announced by the supreme court of that State reached the Colorado part of the river, if all were within one jurisdiction, the aggregate amount of the waters of the Arkansas that could be used above the present State line would be limited only by the matter of reasonable necessity just as it is today, and the only change that is made in the situation is in the distribution within the jurisdiction of Colorado of that aggregate which could properly and lawfully have been taken and utilized if Kansas had retained jurisdiction over the whole.

If, under our methods of use, we do not in the aggregate consume any more of the waters of the Arkansas than we would have a right to consume under the common-law riparian rule, then Kansas certainly has no cause of complaint against Colorado, and it is immaterial to Kansas how we distribute that aggregate among ourselves.

In view of the propositions I have discussed, some of them very hastily and inadequately, I respectfully submit that the rights of the parties in this cause are to be determined by the following propositions:

1. Colorado and Kansas are to be considered as proprietors of the valley of the Arkansas, Colorado holding from the sources of the stream down the valley to the eastern boundary of the State, Kansas being a lower proprietor and holding from the western boundary of that State to its southern boundary, and that all rights as between these two States must be determined on the theory that each is a proprietor of the entire area of land within its jurisdiction within the drainage of the stream, and that all of the lands within the valley are riparian to the stream which passes through them.

2. That under fundamental rules of law the upper proprietor has by natural right, by virtue of its position on the stream, the first right to the use of the running water of the stream to the extent of the reasonable necessities for its use; but with the duty to permit the surplus of such waters, after application to such necessary use, to flow down the stream in their natural course.

3. That for those uses which pertain to the natural wants of men the waters, in the absence of statutory prohibition, may be utilized by the upper proprietor, to whom the waters first come, without regard to the effect of such use upon the supply which reaches the lower proprietor.

4. That in an arid country which is uninhabitable except by the aid of irrigation, but which by the use of irrigation can support a large population, the use of water for that purpose is in satisfaction of a "natural want" of the highest and most imperative character; that the rights of the proprietor on the lower part of the stream, and in this case, therefore, the rights of Kansas, are subject to the equal common right of the upper proprietor, and therefore subject to the right of the upper proprietor to use and, if necessary, consume the water as it passes by.

5. That the vested rights of the lower proprietor, and in this case, therefore, of Kansas, relate only to the surplus of

water that may come across the State line after the exercise by the upper proprietor of his rights in the same waters as already stated.

6. That a State upon the upper reaches of an interstate stream has the right to make such laws as it deems wise for the distribution among its people of the waters required for necessary beneficial uses within the drainage of the stream, and the rights of a State lower down the stream are subject to this right of the upper State to so regulate the distribution of the waters while passing through its territory.

I was intending, if the court please, to take up as a separate proposition the rights which pertain to Colorado by virtue of its being a State of the Union; in other words, the question of how far it has rights bearing upon the question in controversy arising from its sovereignty. My time will permit only a slight allusion to the subject. This court has rightly said that you sit here to administer State law or Federal law or international law, according to the exigencies of the case before you. If the State of Colorado were an independent sovereign State, then under the rules of international law it would have certain well-established fundamental rights, some of which, as a basis for the argument, may be briefly stated.

Halleck, in his work on International Law (p. 91, sec. 18), says:

> "Another right immediately resulting from the independence of sovereign States, is that of self-preservation. This is one of the most essential and important rights incident to State sovereignty, and lies at the foundation of all the rest. It is not only a right with respect to other States, but a duty with respect to its own members, and one of the most solemn and important duties which it owes to them. 'The right of self-preservation,' says Phillimore, 'is the first law of nations, as it is of individuals.' "

Vattel expresses it in these compact words: "The State has the right to everything necessary to its preservation." In this immediate connection he speaks of the necessity of the promotion of agriculture, and in reference thereto uses the unique expression, "It is the nursing father of the State."

Wheaton, in his work on International Law, says: "The rights of a State within its own territorial limits are absolute and exclusive of other States." And again he says: "Every independent State has the sovereign right to regulate the property within its territory."

Applying these general principles to the subject of running waters, Halleck lays down the rule: "Where the entire upper portion of a navigable river is included within a single State, the part so enclosed is undoubtedly the property of such State." If this is true of a navigable river, *a fortiori,* is it true of a river which is not navigable? Mr. Wheaton tells us "the rivers which flow through a territory form a part of the domain from their sources to their mouths, or so far as they flow within the territory." Mr. Wheaton also, however, in this connection, and speaking of independent States, expresses the limitations upon the right to running water. He says:

> "Things of which the use is inexhaustible, such as the sea and *running water,* cannot be *so* appropriated as to exclude others from using those elements in any manner which *does not occasion a loss or inconvenience to the proprietor.* This is what is called an innocent use" (p. 253, sec. 12).

I ask the court's attention especially to the limitation. No State is required to yield to others to such an extent as to cause itself a loss or inconvenience in the use of running water.

Now, it may be said that these fundamental principles recognized by all authorities on international law pertain only to independent States, and that a State of the Union, as, for example, Colorado, is not an independent State. This

contention is made on the part of the Government as an intervenor in this action. It is undoubtedly true that each State of the Union and the people of that State have surrendered a certain portion of the State's sovereignty, and a very important portion of it, to the National Government. It is true that it rests upon this court to determine in every case how far the surrender has gone and to what extent sovereign rights have been retained. But this court, in deciding the question of the extent of such surrender, will be guided by the terms of the Constitution as construed by the court itself in the years that have gone by. The Government as an intervenor in this action does not suggest anything in the Constitution of the Union which gives to the National Government jurisdiction over the running waters of an interstate stream, or in any manner delegates to the United States the power which a State would possess if it were independent in reference to the waters within its borders. The tenth amendment of the National Constitution expressly says:

> "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."

Surely we have the right to call upon the counsel for the Government, before it can succeed in its contention in the present case, to show affirmatively that the control of running waters within the territory of a State, a control which the State would undoubtedly possess if it were fully independent—to show how that control has been delegated to the United States or how it has been prohibited to the State itself.

We submit that it would be impossible for the counsel for the Government to show such delegation of control to the National Government or any prohibition upon the control

which naturally pertains to the State. Now this court has well said:

> "That a State has the same undeniable and unlimited jurisdiction over all persons and things, within its territorial limits, as any foreign nation; where that jurisdiction is not surrendered or restrained by the Constitution of the United States" (City of New York *v.* Miln, 11 Peters, 102, 138).

Again this court has said that "the people of each State compose a State having its own government, and endowed *with all the functions* essential to separate and independent existence," and in that connection this court says:

> "To them [the States] nearly the whole charge of interior regulation is committed or left; to them and to the people all powers not expressly delegated to the National Government are reserved" (Lane County *v.* Oregon, 7 Wallace, 71, 76).

At a much later date this court said:

> "But the States have full power to regulate within their limits matters of internal police, including in that general designation whatever will promote the peace, comfort, convenience, and prosperity of their people" (Escanaba Co. *v.* Chicago, 107 U. S., 678, 683).

These are but illustrative citations from a long line of decisions of this court in support of the proposition I am here making.

In contending for the sovereign right of the State of Colorado to control the use of running waters while the same are passing through its own territory, I am not contending that an adverse claim to the use of such waters may not be decided, and effectively decided, by this court. That is a very salutary provision of the National Constitution which makes it impossible that there should be war between the States, and gives to this great tribunal absolute and complete au-

thority to decide as to the relative rights of States on any matter of controversy between them. But in rendering your decision you will certainly be guided by principles of law controlling the rights of parties, and if necessary resort to the principles of international law in the settlement of their rights.

I would say also that I fully recognize the duty implied in the ancient maxim of the law, "So use your own as not to injure another." But recognizing that maxim, we also claim the benefit of the cognate maxim that "He who is lawfully using his own is injuring no one." So that after all we simply have the question, have the people of a given State on the upper reaches of an interstate stream a lawful right, under the principles of law, international and otherwise, to use the running waters within their boundaries for the purpose of meeting their own necessities while the waters are passing through their domain. I submit that whether you derive the argument from the common law, derive it from any principles of equity or derive it from international law, all alike sustain the proposition that the State which controls the sources of running water, and which has the upper reaches of the stream, has the right to the use of those running waters to the full extent of its own reasonable necessities so long as the water is flowing within its own territory, provided only that it confines that use within those natural barriers which nature itself has fixed.

We appreciate the fact that there is at the present moment an exceptional tendency towards the greater centralization of powers in the National Government, and that efforts are made from time to time to transfer more and more from the States to the National Government the elements of sovereign authority, and it has been recently suggested from a very eminent source that if the States fail to furnish certain legislative control demanded by the people, and furnish it in due measure, then "sooner or later *constructions of the Constitution* will be found to vest the power where it *will* be exercised—in the National Government." It is well that we

have a court such as this distinguished tribunal to hold in even balance the relations between the National and the State sovereignties, and that we have a Constitution which directs and controls the actions of all of the departments of Government. That Constitution has provisions for its amendment. It does not, however, provide for amendments by *construction*. If the people of the United States shall desire to transfer from the States themselves to the National Government a larger measure of the sovereignty which is now divided between them, they can accomplish it by the process which the Constitution itself has provided.

I respectfully submit that the question of rights as between Kansas and Colorado, in the case now before the court, are not to be determined by any new construction which shall have the effect of transferring from a State to the National Government sovereignty which has heretofore been recognized by this tribunal as being reserved to the State itself, and which the Constitution has never by any words expressly, or by implication, conferred upon the National Government.

In view of the expiration of the time allotted me for this discussion, I leave the subject with these suggestions, thanking your Honors for your kind attention.

ORAL ARGUMENT OF HON. C. C. COLEMAN, ATTORNEY GENERAL OF KANSAS, FOR COMPLAINANT.

Mr. COLEMAN: If your Honors please, of the time assigned to the complainant at the opening of this case there remains at this time just fifty minutes, and in view of the fact that we have two counsel to close the case, or at least that that was our intention, and that the court has been liberal with the other parties, I ask the court now if it will have the kindness to extend that time for us thirty minutes.

Chief Justice FULLER: We will extend it to four o'clock. That gives you an hour and twenty minutes.

Mr. COLEMAN: I wish to address myself to only two features of this case.

When the court had this case before it upon the demurrer filed to the original bill, and when the demurrer was overruled, or at least passed to final hearing, I understand the court to have laid down as one of the principles determined in that case that a State in its sovereign capacity has the right, as a party, to litigate in this court against another State a cause of action in which interests of large numbers of its population are involved. As alleged in the original bill and in the amended bill, it is a fact in this case that the injury complained of is an injury to a large number of citizens and property-holders in the State of Kansas. That lays the foundation for the State of Kansas being the complainant in this case.

Now, we maintain that the testimony shows, and that the laws of that State as before this court show, that the State of Colorado is the real defendant, the real injuring defendant in this case. This appears from these facts: Its Constitution has been quoted, and mentioned in our bill as one of the foundations of the injury which it works to the State of Kansas, and is quoted in the bill as being a part of our cause

of action. A miscitation of the sections in the bill, I presume, will not be regarded as very material. The sections of the Constitution are sections 5 and 6 of article XVI. It is printed in our amended bill as article XV, which I presume will not be regarded as important. But those two sections of the Constitution of Colorado seem to engraft upon the law of Colorado a different system for the treatment of the waters of streams from that which had been the system under the law as theretofore existing; that is, the right of appropriation and the right of actual proprietorship in the waters of a stream, as contradistinguished from what had been and what we have always been taught to regard as a right under the law—namely, the use of waters.

Mr. Justice BREWER: Now, right there. This (the bill) says "Colorado, as a political corporation." Now, what has the State of Colorado as a State done in reference to the actual appropriation of the waters of the Arkansas river?

Mr. COLEMAN: That, your Honor, I was coming to right now. I say, therefore, by its Constitution, that it has laid the foundation for what it proposed to do; second, it has actually taken all the water by the laws it has passed for the purpose of carrying out the provisions of that Constitution. We have cited in the original brief filed in this case upon its former hearing copies of the laws of the State of Colorado which bear upon this subject,—the statutes,—and they were all cited in an appendix to the original brief which is on file in this court. Those laws are to this effect——

Mr. Justice HOLMES: You mean the original brief at this stage of the case?

Mr. COLEMAN: I mean the brief filed, your Honor, when this case was up upon hearing on the demurrer about four years ago. That brief is on file in this case, and will be at the command of the court when it considers the case.

Now, those laws, as I said, are of two characters. First, there is a series of laws making appropriations for the establishment of dams and reservoirs on the upper waters of the Arkansas river and other rivers in the State. Some of them

are tributaries of the Arkansas river. Those statutes are quoted in the brief referred to.

Mr. Justice PECKHAM: Making appropriations for the work by the State?

Mr. COLEMAN: Yes, for the construction of those dams. Then there is another statute, and that is quoted here, too, which makes a large appropriation for the construction by prison labor of dams and reservoirs for the purpose of conserving and retaining the waters of these rivers.

Mr. Justice BREWER: Was that, in effect, carried out?

Mr. COLEMAN: That, your Honor, I am not able to state as a fact, whether it was or not. I find the law in the statute book. Whether the testimony shows that was carried out or not, I am not able to answer.

Mr. ASHBAUGH: It was carried out in part.

Mr. COLEMAN: I am just informed by counsel that it was partially carried out, as shown in the evidence.

Then in the third place is the statute of Colorado—providing a very elaborate system of adjudication—by which the waters of private and public dams are regulated; by which the water is apportioned to each taker in accordance with the adjudication which the courts have given him upon actions prosecuted for that purpose. And the testimony and the law of Colorado as cited here show that every drop of water that goes out of the Arkansas river into any one of these ditches goes under the hands of the State, which is upon the headgate of every canal—represented by the water commissioners, the district water superintendents, and by the State engineer. It was one of these district superintendents that testified in this case, whose testimony was quoted by Mr. Loomis, that they take every drop of the water and would take more if they could; that was Mr. Chew, who testified that when there was plenty of water for all, each ditch as the water went down the river got its share according to the adjudication; and if there was more than enough to supply them all, he turned it all in anyway. He testified also that, as represent-

ing the State of Colorado, he would say to this ditch, "You can have water," and to the next one, "You can have no water"; and that that was determined according to the priority of appropriation.

So that we say the State of Colorado itself, through its laws and officers, makes itself a party to the taking of this water which is complained of as the foundation of the injury alleged in the two bills that have been filed here.

Now, something has been said here, and said repeatedly, about the area of drainage,—the area within which they claim the right to irrigate, to use the water for irrigation, and to convey the water from the river upon the land; and I have gathered from the remarks made by several of the counsel that they have never extended that claim—that is the way they represent it to this court—beyond what they call the "watershed" of the particular stream; and yet I find the supreme court of Colorado—I do not know the date, but it is in the cases of Coffin *vs.* Ditch Co., 6 Colo., 449, and Hammond *vs.* Rose, 11 Colo., 526—made in effect this declaration of the law of Colorado. The right gained by priority of appropriation is in no way dependent upon the *locus* of the beneficial use designed; and the lands to be irrigated need not be on the banks of the river, and may be in a *different watershed;* so that the law of Colorado, as declared by its supreme court, is that the water may be taken just to the extent that there is a physical possibility of taking it, so that the lands of Colorado need it, and that this right is independent of any watershed and independent of any equal right of riparian proprietorship whatsoever.

Mr. Justice BREWER: Although the Supreme Court make that declaration to be the law, unless there was actually some proceeding carrying into effect that proposition, in regard to the Arkansas river, it would be purely an academic question, would it not?

Mr. COLEMAN: I presume so, unless it be to show the extent to which they claimed and asserted rights, or were about

to put it into operation, or were in the actual process of putting it into operation. I think your Honor is entirely right about that.

Now, upon the matter of the evidence. It has been variously asserted here that there is no evidence upon which the State of Kansas, the complainant in this case, can claim that it has established a damage sufficient to be the basis of a cause of action, and they claim to substantiate that assertion by citations from the evidence. They say this man and that man testified that he had not been damaged; they leave out of consideration, however, those great volumes of testimony which are cited and referred to in the briefs and which it would be futile to attempt to review here at any length, of citizen after citizen, as to the damage he had suffered in his particular business and in his particular property, and large numbers of them estimate it as a very substantial and destructive loss and damage.

Another thing: They make the statement here that the evidence fails to show in any conclusive way the fact that this is a continuing damage, and they make the statement that this is apparent from the fact that it appears from the testimony of the witnesses universally that the land is worth more now than it was thirty or forty years ago. Well, now, I submit, your Honors, that that is an unwarranted conclusion. The fact that the land, in its damaged state even, may be worth more now on account of the general development and improvement of the country, than it was thirty or forty years ago, does not establish that it has not been damaged by being deprived of the use of this water. If it had the water now it would be far beyond its present value.

But I have so short a time that I must not dwell upon that.

Counsel who last addressed the court adopted the principle which Mr. Loomis contended for, namely, that of reasonable use; but made his own very eccentric application of it, as it seems to me. Now, water is said to be common. It

is said to be a common right; and it is said to be comparable to air in that particular, and that they are entitled to the reasonable use of the water as they would be of air; but so is Kansas, is it not? The case of Clark *vs.* Allaman has been cited as sustaining this proposition; but when that case is read, your Honors (it is cited in our brief extensively), it will be found that that court held that Mrs. Allaman was entitled to a *reasonable use* of that water just as well as the upper proprietors were. Reasonable use. We understand that to mean a reasonable use taking into consideration the equal rights of other proprietors to like reasonable use. Is it reasonable that that which is common may be all appropriated by one? Is it reasonable that that which is an appurtenant to the land when one obtains the use and possession of it may be taken away from him without compensation?

Mr. Justice PECKHAM: Did that decision of the Kansas court give any relief to Mrs. Allaman?

Mr. COLEMAN: It accorded to her, as I remember it, although I have not looked at the case lately, a reasonable use of the water. Mr. Smith has looked that case up since this suit was commenced, and will call your Honor's attention to its conclusions.

Now, I come to the so-called underflow. Counsel for defendants in this case have been disposed—and even for the Government too—to treat this question of underflow with a good deal of levity—well, a little inclined to ridicule it; and they say it is a fetish and a superstition and all that sort of thing. Now, there is testimony in this case of nearly a hundred farmers—I am guessing at that, I don't know the exact number—who have lived in that valley for twenty or thirty or forty years, and some of them more than that. They are not "professors;" they may not be college graduates; they are not "experts" in irrigation, nor "State engineers," but they have lived on that river their whole lives, and they have worked their very souls into those farms they

have carved out there in the valley, and they know what they are talking about. Now, the flow of water is not necessarily a matter of expert testimony. We all know that the water runs down hill—on the surface at least—and it does not require an expert to tell us so. A man who has lived on a piece of land for fifty years, and has dug down into it and knows the surface and the sub-surface conditions, and knows that the water at one time was low and at another time was high, can testify to these facts; but these men testified that the level of the water under their lands has gone down from three to five feet within fifteen years, and they are not one nor two nor three, but there are scores and dozens of them that say that thing. They also say—of course that is drawing a conclusion to some extent—that it was caused by the lowering of the river—drawn from the fact that its rise and fall coincide with that of the river. We will not dwell upon that.

But I just wish to call the attention of the court in that connection to a most peculiar thing in this brief for the State of Colorado, and I am not going into any comparison of the testimony; but on page 3 of their brief they make this very remarkable statement, and I will read just a few lines of it:

> "The contention of the defendant, State of Colorado, as to the facts may be concisely stated as follows: The Arkansas river, popularly so called, is substantially two rivers, one a perennial stream rising in the mountains of Colorado and flowing down to the plains, and this *Colorado* Arkansas, when the river was permitted to run as it was accustomed to run, prior to the period of irrigation, poured into the sands of western Kansas, and at times of low water the river as a stream entirely disappeared. Its waters were to some extent evaporated, and as to the residue, were absorbed and swallowed up in the sands. So that from the vicinity of the State line between Kansas and Colorado on eastwardly as far at least, as Great Bend, if not farther, at such times of low water there was no flowing Arkansas river. Farther east, however, a new river arose, even at such times of low

> water, and partly from springs, partly from the drainage of the water table of the country supplied by rainfall, and partly from the surface drainage of an extensive territory, this river gradually again became a perennial stream."

Now, a beautiful theory, a beautiful explanation! But does it never occur to the learned gentlemen who have made it that the volume of a river flowing seven or eight hundred cubic feet per second of time, before the time of irrigation—flowing into the sand and gravel underlying the valley, must go somewhere? It does seem to have occurred to them that it must go somewhere, and on page 186 of their brief they tell us where it goes:

> "We consider that a reasonable and natural explanation of the rapid disappearance of such *tremendous volumes* of water in the western part of Kansas is found in the fact that from the 'sieve' this volume of water drains, as it were, through a funnel, into an old gravel bed, which was once in primeval ages the actual channel for the course of the stream which comes from the mountains of Colorado and seeks a route toward the sea, and that under the sink at Bear Creek, and under the sands of the Cimarron, there is an ancient channel which is the avenue of exit for the waters which now so quickly disappear from the Arkansas."

Now, it became apparent to counsel that they had to account for that water in some way other than on the theory of the underflow; and so they had to bore a hole under several—I don't know whether it is a hundred miles or not, but approximately that, of solid rock and clay into the valley of the Cimarron river to the southward; and so they account for that volume of water flowing into the sands of western Kansas; when there remained for them the plain and easy explanation, the fact that down through the sands that underlie the valley of the river in Colorado and underlie it and the broad expanse of from five to twenty miles on either

side of it there is a deep laid bed of sand and gravel (the testimony shows that that is so), and that this water pouring into these sands in times of drought when there is no surface flow, flows down on under and through those sands, and when it is added to by acquisition and by tributaries, becomes again a surface stream, thus defining the current, the extent, and the channel of the underflow. Now, our theory is at least as reasonable as the Cimarron Valley theory; and has the advantage of it in being supported by credible evidence.

Now, I have not the time to go into what I would like to at this point, and that is the discussion in Los Angeles *vs.* Pomeroy, reported in 124 California, which dealt with a river just like this. The language of the court in that case is so apt, so fitting, and so closely describes the conditions existing in this case that I hope your Honors will carefully consider that case and read the whole opinion when the time comes to deliberate upon the case.

On account of the lapse of time and the short time left for Senator Smith, I will now leave the case with him. There is one thing, however, which I omitted to say: The attorney general of the State of Colorado has just said to your Honors that they would file something in the nature of a supplemental argument in the way of extracts from the testimony. We have not seen it and do not know what it is, and we will ask leave of the court within a reasonable time, to be stated by the court, to file something in the nature of a protest against it or answer to it if we conclude it to be necessary.

Mr. Chief Justice FULLER: We cannot give you a great deal of time; say five days.

ORAL ARGUMENT OF HON. F. DUMONT SMITH FOR COMPLAINANT.

Mr. SMITH: May it please the court, I assume that your Honors, sitting in this case as triers of fact as well as judges of law, will first try and determine the question of fact, will first determine whether there is an issue of fact in this case, whether there is a fact upon which a case in law can be based. That will be, I assume, the first inquiry, and if Kansas has not made out a case, then any declaration of law will be mere dictum. Nothing but a moot controversy would remain. Such a declaration would be binding upon no one, and for that reason, the Government desiring here an expression of law upon this subject, I was amazed to hear counsel for the Government doing their utmost to overthrow the Kansas case and secure a judgment against us.

Now, upon that question of fact, I submit to your Honors, first, that there is but one question of fact in this case, viz: Was there ever an Arkansas river in Kansas? That is the only fact out of all this mass of testimony on the final analysis of the case which remains for this court to determine, because it is conceded by every party litigant to this case, it is conceded by every witness upon the stand, that there is today no Arkansas river in Kansas for any considerable portion of its course; and counsel for defendants account for that by saying it is a "broken" river; so that is practically the only issue of fact, because, if there was a river there, and it is now gone and the proof is clear that it went coincidentally with its abstraction in Colorado, then we have the true larceners of the river in court and are entitled to a judgment.

Upon that question of fact Judge Beaman has arranged a "deadly parallel," in which he brushes aside with a wave of his hand fifty-nine Kansas witnesses, because they were put upon the stand in rebuttal. I submit that the order

of proof is always within the discretion and control of the court, and that is particularly true in an equity cause and more particularly true in a cause heard before a commissioner. Colorado could have come back and introduced more testimony if she desired, and the testimony was not closed until every litigant had expressed itself as satisfied that its evidence was all before the court. And in that "deadly parallel" of Judge Beaman's he balances one witness against another, and says "Look, the preponderance is with Colorado. We have one hundred and fifty; Kansas, one hundred and thirteen;" or rather fifty-four, because he excludes fifty-nine of them. I submit that evidence is not weighed like sugar and coffee. Evidence is weighed by the capacity, knowledge, and means of observation of the witnesses, and I propose to analyze to your Honors here the character, the means of knowledge, and observation of the Colorado witnesses very briefly.

Of their one hundred and fifteen witnesses, eighteen of them testified for us—that is, testified either upon direct or cross examination that there had been a river there and they had seen it disappear. Twenty-four of their witnesses never saw the Arkansas river at all, or else never saw it before the diversion of water in Colorado and its loss in Kansas. They were put upon the stand for some other purpose, experts, or something of that sort. Twenty-one of them testified that they had no recollection as to the condition of the river in the '70's or '80's or prior to the completing of those great canals in Colorado. Twenty of them saw the river once, trappers, buffalo hunters, soldiers, wandering loose-footed across the plains, who had no concern or care, and, as far as that is concerned, never saw the river after that time. Twelve of them saw it twice, twenty-three saw it occasionally, and only thirty-two out of this great array of witnesses lived upon the river and were of the same character and had the same knowledge and observation that the witnesses for Kansas had; and I submit that upon

any of the ordinary rules of weighing testimony before a jury or before a court trying the facts, Kansas has shown by an overwhelming preponderance of the evidence that there was an Arkansas river in Kansas and that it disappeared shortly, very soon, or almost immediately after the diversion of water in Colorado.

I do not think it is worth while to follow up Mr. Dawson's argument. Brother Dawson made an extremely clever after-dinner speech, but I do not think he is quite fair to the court. He selected a witness here and there that had been badgered until he forgot himself and delivered absurdities, but as an illustration of the disingenuousness of it, your Honors will recall the testimony of Mr. Chapman, who, he says, went there as a boy four years old, and he told of the precocity of that boy four years old who could tell how the river looked then. Senator Chapman never testified as to how the river looked when he was four years old, but he had lived on the river from that day to this, and while living there had learned to swim in the Arkansas river at Great Bend, and I submit to your Honors that a man never forgets the old swimming hole where he learned to swim when a boy; Senator Chapman remembered the old swimming hole, now a bed of shifting sand which your Honors could cross without wetting your shoe soles, and that is why Brother Dawson selected him as a target for his sarcasm.

The question has been asked and has remained unanswered, I believe, as to what sort of decree can be rendered for Kansas in this case, assuming that the question shall be decided in favor of Kansas, and the principles of law applicable to the facts that can be found to grant us relief, then what shall the relief be? We conceive that the court may enter three kinds of decree; first, the court may say *"currere solebat,"* let the river flow as it was accustomed to flow, and grant us a mere injunction against the parties defendant in this court. As to the efficacy of that or any

other decree, counsel for the Colorado Fuel and Iron Company have expressed great fear, and even went so far as to say that it would require a United States soldier to be put at every head-gate. I do not think, may it please the court, that Colorado is going to carry the State rights doctrine as far as South Carolina did, although my friend, Judge Beaman, apparently threatens to do so. It seems to me counsel hardly appreciates what this court is, and it seems to me absurd to say that a court whose arm reaches from Porto Rico to the Philippines, upon whose jurisdiction, literally, the sun never sets, whose mandates are backed by the purse and sword of eighty millions of people, cannot make a handful of Colorado irrigators obey its mandates and do justice. Why, the State of Colorado has afforded the very objects upon which this decree can act, the very instrumentality by which it can be effectuated in its system of division engineers, head-gate men, and officers, who control the inlet and outlet of water through every head-gate of Colorado, and a mere injunction against them will be sufficient. That could be a final decree at once. Second, the court might take what is commonly called the California doctrine, the modified doctrine of the common law, and give us a reasonable share of that water, limiting Colorado to a reasonable use as a riparian proprietor, and I shall revert to that again in a moment. Or, third, it may, but I do not think it will, take the extreme Colorado doctrine of prior appropriation, wiping out, as I am sure this court will, the State line as a defense or as a barrier to our rights, and simply establish the doctrine of prior appropriation in that country and say, as it can from the evidence, that the seven ditches in Kansas are prior in time, prior in beneficial appropriation to all of the defendants that are now here in court. That question would require simply a final decree, and it would be effectuated later by the individual defendants by individual suits in the United States courts. But it would establish the principles of the law

and wipe out the State line as a defense, but if the court adopted the second plan and followed what is known as the California doctrine of reasonable use and an apportionment of the waters of the stream, then, of course, the court would have to make an interlocutory decree, retaining jurisdiction of the case and appointing a commissioner or a master to go out there and take testimony and find what would be a reasonable, fair use of the water by the State of Colorado, and what the share of Kansas should be. Any one of those decrees, may it please the court, will satisfy the State of Kansas. Any decree except one denying our bill for injunction.

Now, what is this California doctrine? It seems to me that there has been a great deal of haze thrown around that doctrine and that the subject is much confused here, and I am going to state to the court what I consider the California doctrine to be, not for the purpose of educating the court, but that the court may understand what I mean when I am talking about it. I understand it thus: While it is true that in England you can find scattered through the books and in decisions dicta to the effect that irrigation is one of the common law rights, and you can find the same in some of the States of the east, yet, as a matter of fact, it was pure dictum all the way through. I am unable to find a single decision where the question of this right to use water by riparian proprietors has been litigated, either in the eastern States or in England. The question was academic. We got the common law with that dictum attached to it; but it was a mere argument. It was of no practical effect. It has never been put to working use. It came west where the difficulty is not, as it is in England, to get rid of water, but to get it and preserve it, so as to have it to use, to that country where there is never water enough, and then it became of some practical use to inquire how far and what was the extent of that right. And in the case of Lux *vs.* Haggin, which is one of the great beacon lights

of this controversy, it was defined what that use was and it has been repeatedly defined since, and, in my judgment, it is upon the California doctrine, as I shall state it, that this case should be decided and our rights settled. And I understand the California doctrine to be this: That under the strict common law the riparian proprietor had a right to compel the upper riparian proprietor to let the water go by the land, whether he desired to make beneficial use of it or not. In other words, it was not necessary to his right as a riparian proprietor that he desired to use that water, but he had a right to the flow of the stream, undiminished, except for the wants that are included in the rights of a riparian proprietor. California has said "we will modify that to suit the conditions of this country; we will permit the upper riparian owner to use this water for other than domestic purposes; we will permit him to use it for mining or for irrigation, even though he thereby materially diminishes this flow." But that use must be reasonable and the diminution must not be so great as to deprive the lower appropriator of the supply that is necessary for his needs of the same kind, that is, the water belongs to the entire community of riparian proprietors upon that stream, each has an equal right in it, each may use it for any beneficial purpose, with a restriction that that use—beyond the domestic uses to which I shall come in a moment—but that use for irrigation, for instance, must not exclude the other riparians from an equal use and an equal right.

Now, that was the California doctrine. It has been practically adopted by the courts in nearly all of the semi-humid States. It has been adopted in Nebraska and Kansas. It is expressly adopted in Clark *vs.* Allaman. The fact is that in that case an injunction for Mrs. Allaman was denied and the lower riparian was given an equal right with the upper riparian in the flow of the stream. In the syllabus it is said:

> "The use of the water of a running stream for irrigation after its primary uses for quenching thirst

and other domestic requirements have been subserved, is one of the common-law rights of a riparian proprietor.

"The use of water by a riparian proprietor for irrigation purposes must be reasonable, under all the circumstances, and the right must be exercised with due regard to the equal right of every other riparian owner along the stream."

The court then goes on in the opinion and says this:

"Yet a proprietor cannot under color of that right, or for the actual purpose of irrigating his own land, wholly abstract or divert the water course, or take such an unreasonable quantity of water, or make such unreasonable use of it, as to deprive other proprietors of the substantial benefits which they might derive from it if not diverted or used unreasonably. This rule that no riparian proprietor can wholly abstract or divert a water course, by which it would cease to be a running stream, or use it unreasonably in its passage, and thereby deprive a lower proprietor of equality of property, deemed, in law, incidental and beneficial, necessarily flows from the principle that the right to the reasonable and beneficial use of a running stream is common to all the riparian proprietors, and so each is bound so to use his common right as not essentially to prevent or interfere with an equally beneficial enjoyment of the common right of all the proprietors. The right to the use of flowing water is public *juris* and common to all the riparian proprietors. It is not an absolute and exclusive right to all the water flowing past their land, so that any obstruction would give a cause of action; but it is a right to the flow and enjoyment of the water, subject to a similar right in all the proprietors, to the reasonable enjoyment of the same gift of Providence. It is therefore only for an abstraction and deprivation of this common benefit, or for an unreasonable and unauthorized use of it, that an action will lie. The fairness and equality between owner and owner here proposed must commend themselves to all considerate persons."

Except the people of the State of Colorado.

Now, that is known as the California doctrine. It is the law of Kansas today. In other words, the case of Clark *vs.* Allaman, interpreting irrigation statutes, interpreting our whole body of laws, has recognized that as the law of Kansas with regard to water. Mr. Vaile says he is satisfied with that and so are we. Now comes another question. There have been dicta that irrigation was a natural want, that it stood in the same rank as domestic use. But again it comes from States where this has been an academic question and not a practical one, and it is mere dictum every time, as it was in the case of Merrifield *vs.* Worcester, Mass. It is true that Texas in one case did say that irrigation was a natural right, but in Fleming *vs.* Davis, 37 Texas, they expressly repudiated that statement and put irrigation in its true place as a secondary want next to domestic purposes. Even Colorado itself in its constitution makes irrigation a secondary want, and says domestic purposes shall come first and agriculture next, and that agriculture shall be above manufacturing.

In the case of Anderson *vs.* Bassman, decided by that court in litigation between irrigators in Nevada and California, the court there considered all of this dicta and expressly held, sitting in the arid region and applying the water rights of an arid country, that irrigation was not a primary want, but a secondary want, and that irrigation could not be permitted to deprive other riparian proprietors of their domestic supply under any guise or any circumstance. So we have then, the common law as applied in California, as applied by the semi-arid States. Now, as to the law that would fit the Government's case, I wish to congratulate counsel for the Government upon the success with which they have argued their client out of court. I am not sure, however, but what, in spite of counsel for the Government, they are still in court. I find in the bill of intervention this statement of complaint of what Colo-

rado is doing. After enumerating, it winds up "and would tend to destroy the navigable capacity of the Arkansas river and other interstate streams." Now, that gave the intervenor a right to intervene. It gave this court jurisdiction of that controversy so far as the Government is concerned. And Kansas has proved that the Arkansas river is navigable in law. The counsel who opened the argument for the Government made the definition of navigability too narrow. He insisted that a stream was only navigable when it could be navigated. A stream is navigable when it can be navigated or when it can be made navigable by the ordinary means of river improvement. I was astonished, too, to see counsel for the Government minimize the effect of water transportation. He compared the light commerce carried on on the waters of the Arkansas river with the magnificent results of irrigation, utterly ignoring the fact that this little waterway fixed the freight rates between all points upon that river. He ignored the fact that the commerce upon the Great Lakes, vast as it is, is of more value as a factor in the rate question than it is as to the freight carried upon those waters. The rate upon merchandise from the Atlantic to the Pacific is based upon the water rate from Chicago to Buffalo, and it enters into all trans-continental freight charges. So we plead the navigability of the river and prove it, or its possibility of being made navigable, not because we can protect it by injunction, but because it is one of those substantial assets of the State which we think we have a right to retain against the aggression of Colorado. Counsel for the Government spent an hour trying to get rid of that proposition, and then the Solicitor-General came in with the proposal that to an old-fashioned mind like mine was astounding. I confess I like the Constitution as it came down to us from our forefathers, without these new frills and embellishments. And, if I gather his proposition, it is that this is something

more than a government of delegated powers, that wherever there is a misuser or non-user of Government function, a vacant field, as he expresses it, there the Federal Government may enter and take possession, an astounding doctrine, one that in its final analysis would permit the President of the United States to take charge of the universe very nearly. But even if that were true, I submit, your Honors, that there is no non-user of function here, there is no unoccupied field. This field where this controversy is being fought out is now occupied by the judicial branch of this Government, and that is why we are here with a justiciable controversy, because this court occupies that ground. Why, counsel for the Government seem to think that unless that field is occupied by the executive it is vacant. Not so. The executive may come into this case later if Judge Beaman starts his rebellion, but it will come in simply to sustain the judiciary, which occupied that field wholly and to the exclusion of all other branches of the Government. Now, how will this California doctrine affect the Government? I assert that it will solve every irrigation problem, that it will settle every contest between irrigators in the different States. I assert that it will protect and absolutely complete the whole Reclamation act. I assert it is a complete solvent of every difficulty which has been encountered in the contest between irrigators in the different States. In other words, under the application of that doctrine, the Federal courts, in deciding between irrigators in the different States, will apply the doctrine of reasonable use, the California doctrine, and apportion the water accordingly, and it will result in the beneficial use of every drop of the water of all of these interstate streams in the arid or semi-arid West. It will protect the Government in its investment, because it will prevent the upper or crest State from monopolizing all of the water that may be put into that stream by the efforts of the Government or by its Reclamation Service. It will

distribute it among all the beneficiaries riparian to the stream and in the public-land districts that are entitled to it.

My friend, Brother Vaile, of course, takes a different view of this California doctrine from what we do. Counsel for Colorado cannot escape from their education and environment. They cannot escape from the idea of monopoly in water instead of equality, and so they insist upon a dominant servitude somewhere. They cannot conceive of anything else, and they insist upon the dominant servitude in the crest State. And so they attempt to take the common law, wih its equality, its parity of right, to the whole community of riparian proprietors, and they engraft upon that, the doctrine of appropriation, in effect. They engraft upon that doctrine of equality the doctrine of monopoly. They create a hybrid, but, unfortunately, unlike that useful hybrid, the mule, it won't work, at least not in this case.

A great deal has been said in this case about the underflow of the Arkansas river, and I am like the other gentlemen; I don't know whether it is pronounced Arkansaw or Arkansas. That underflow, which is dear to the State of Kansas, has been treated with unbecoming levity by counsel for Colorado. They think there is no underflow, and they have created, as General Coleman told you, a sieve to account for the disappearance of this water, and then to back up the sieve theory they have it go far beyond Brother Dawson's siphon and go clear under the Cimarron river, this enormous volume of water. Now, if the court please, the true theory of that river is the sponge theory. The bed of that river is a vast sponge, from one-fourth to one-half a mile wide and two or three hundred miles long, composed of fine sand capable at the highest point of saturation of holding an immense quantity of water. Now, when that sponge dries out and when these floods come down the river, the sponge absorbs it all. There is no surface flow

when you get down there. That is what makes the "broken river," the drying out of this sponge. For instance, in May, 1904, a flood of 8,000 second-feet crossed the State line up here at Coolidge, and when it reached here, at Kinsley, it was reduced to about 2,000 feet. In other words, something over 6,000 second-feet of that flood had disappeared along there in two days. It has gone to saturate that sponge, and, from that time on, for some time there was a uniform surface flow of the river. But, mark you, on that fourth day of May there had not been a drop of water in that river for more than ten months. There has been a picture of it included in the record, taken at Garden City. At the time that picture was taken it had been absolutely dry for ten months.

Now, in the old days when I first recall the Arkansas river, there was always a small surface flow. Small or great, there was always a surface flow there which kept that sponge saturated and maintained the level of the underflow, and whenever the June rise came, which we depended upon as regularly as the recurrence of the seasons, it gave us a surface flow in the river. We had fish in the river. The boys learned to swim in the river. It was a true river. The low periods were in the early spring and the late fall, and that is when the trappers saw it, going to the mountains in the spring and returning in the fall.

That underflow, then, depends upon that. Now, a word as to that sieve theory. These gentlemen fix this sieve at Garden City and they siphon it out into the Cimarron river, which runs down about here a hundred miles away. Now, is it not an astonishing thing? If you will notice that map, Exhibit B, you will see a system of irrigation ditches right along where this sieve now exists, started in 1879 and finally completed in 1882, at a cost of more than four million dollars. About four hundred miles of them, seven ditches in all. Is it not an astonishing thing that eastern capital would come to that country and spend four million dollars

in building a system of irrigation ditches where the river was nothing but a sieve? Why, the simple fact of the existence of those irrigation ditches there proves absolutely that before the appropriation of this water in Colorado that was a river capable of furnishing water for those ditches and not the dry sieve these gentlemen have made it appear to be.

Now, the question as to whether this underflow is a true subterranean stream or merely percolating water is, of course, of some consequence in this case, although as we look at the law it is not of as much consequence as we thought it was when we drew the bill and took the testimony. In some respects it is in law an underground stream. It has a defined current all along its whole course. Something was said about Professor Slichter here. I think Brother Dawson told how he measured the underflow. I have here his book entitled "The Underflow in the Arkansas Valley in Western Kansas," from which Mr. Dawson quoted. Professor Slichter never made a single measurement anywhere east of Garden City. It was along by Garden City, and from there to Deerfield where the formation sloped on one side to the river and the other way from it. By the way, Brother Dawson had a good deal to say about the character of our witnesses and their testimony, and the fact that their witnesses were experts. I submit now, your Honors, that there is nothing occult or mysterious about the appearance of water. A man who never saw a drop of water except in a pitcher or bath tub is just as competent to tell whether there is water in the river as the most hoary-headed expert that ever drew salary from this Government. It is not a question of expertness; it is a plain, obvious physical fact that anybody can testify to. Now, this underflow is shown throughout to have a steady current, but it is necessary to the legal existence of any underground stream, so that it shall be protected, that it shall be confined within well-defined limits; but it is not necessary, understand, that its lateral limits should be ascertained or defined, but simply that they are

reasonably certain of capable definitions. Now, is it necessary that it should be confined laterally between banks of stone and earth if it is a true stream and not a vast expanse of percolating water running in any direction? Now, upon this point we have only this evidence. Fifty or sixty witnesses testified to the existence of this flow throughout the bottom of the Arkansas river and up to the second bottom and to the foot-hills. No witness who was put upon the stand testified to the existence of an underflow beyond the bottom. Apparently there was none. Whether on account of the greater depth and increased pressure or whether the strata there was different I do not know, but it is shown that there is a flow on the bottom and it is not shown that there is any flow beyond, and I submit that it is a fair assumption at least that that is a true underground stream following the course of the river itself. However, as I said before, if it is mere percolating water we are entitled to its protection and beneficial use. There has been a great advance, particularly in the last few years, in the doctrine of percolating water, and the old doctrine of *cujus est solum* as applied to percolating waters is perfectly obsolete or obsolescent. It is on its last legs. That doctrine was first announced in the case of Acton *vs.* Blundell, decided in England in 1841. I believe it is the first case in the books upon percolating water. It was a case of a mine draining the percolating water that supplied a neighbor's well. The court there applied the doctrine of *cujus est solum*, that everything beneath the soil belonged to the owner, and that he may withdraw that water and do what he pleases with it, no matter what damage he does to his neighbor. The court also placed its decision upon the ground that it would be too difficult to trace its course and movements underneath the ground. It was a case of first impression and very slight impression apparently at that time, and the decision seemed to be dictated as much by indolence as anything else. However, it was slavishly followed by Chasemore *vs.* Richards and Shugar *vs.*

Canal Company, although in that case Lord Coleridge and Baron Wensleydale wrote dissenting opinions. It came to our shores and was received here and followed in an early Pennsylvania case and an Ohio case, and finally in 1863, in the case of Basset *vs.* The Company, a New Hampshire case, the court for the first time examined this case and adopted the true rule. The court said, "If there is a right of property in percolating waters, and if the *cujus est solum* doctrine is to prevail, it is no right there because you cannot defend it. A can steal water from B, and C from both of them, and it becomes then not a question of right, but of might, and that is not a right which the courts cannot protect." Blackstone says there is no right without a remedy. The court went back to the *sic utere* principle which is universally applied to all property rights. They said that the use must be reasonable; that a man had the right to pump the water and use it on his land even if it did diminish his neighbor's supply, but could not use it unreasonably or make merchandise of it and sell it to somebody else. That was reaffirmed a little later in the New Hampshire case of Sweet *vs.* Cults.

The next case was that of Smith *vs.* The City of Brooklyn, in which that city, by the installing of powerful pumps, drained land and dried up a pond belonging to the plaintiff and made merchandise of the water and sold it to the citizens of Brooklyn. The court held that that was an unreasonable use and granted an injunction.

Then came the case of Westphal *vs.* The City of New York, and there was another much-despised underflow. The plaintiff had a field where he raised lettuce and celery and that sort of thing, because there was a sub-saturation just as we had in the valley of the Arkansas river before our Colorado friends cast longing eyes upon our prosperity. They drained it. The pumps were installed in 1885. The suit was brought in 1888 and decided in 1900, granting an injunction against the city unless it compensated the owners.

Laches was urged, the plaintiff having allowed thirteen years to go by, but was denied by the court.

Then came the case of Tarbell *vs.* New York, another underflow case affirming the Westphal case.

Finally the case of Katz *vs.* Walkinshaw, another beacon light upon the subject of percolating waters as great as that of Lux *vs.* Haggin upon irrigation. The facts in that case were that a vast bed of gravel many feet in depth was supplied with water from the surrounding hills, drainage. The irrigators who owned this land pumped it to the surface to irrigate their lands with small pumps. A ditch company sunk powerful pumps and pumped the water out and put it into a ditch, delivering it to distant lands and disposing of it as merchandise. An injunction was sought and the case was exhaustively argued in court. A lengthy opinion was rendered; then the State of California woke up to the fact that this was a land-mark case. A rehearing was allowed and every irrigation lawyer of distinction in California appeared in the case as an *amicus curiæ*, and the court again affirmed the doctrine of *sic utere* as applied in the New Hampshire case and said to this company, "You may pump this water out to use on your own land, but it must be a reasonable use, and you cannot make merchandise of it and sell it to somebody else, because that is an unreasonable use."

Willis *vs.* Perry, in Iowa; Stillwater *vs.* Water Company, in Minnesota, and East *vs.* Railway Company, in Texas, all hold to the same doctrine; and that I assert, your Honors, is the modern doctrine of percolating waters, the doctrine of *sic utere*, the same doctrine we desire to have applied to the surface flow of the Arkansas river. Now, applying that law to the facts in this case, what are the results? Assume this is merely percolating water. If the court shall find, and it will be inevitably driven to the conclusion, that more or less of the supply of this underflow comes from the flow of the river, the court will discover that there is absolutely no dispute, practically, upon the question that that underflow has

been so far lowered that it is no longer beneficial, I say then, if Colorado has taken the water, she has also taken our underflow, and we are entitled to an injunction against this unreasonable use which makes merchandise of the water and delivers it to lands far distant from the river and deprives us of our springs and sources of supply that fed that underflow.

This question of what are riparian lands bothers me very much. I am not satisfied with any definition I have ever seen and cannot frame one myself, and I agree with Brother Vaile that it is a very difficult proposition. I confess that I cannot agree with Justice Burch's definition of riparian lands, that they include all lands within the drainage area of the stream to the top of the range, because that makes all lands riparian. In this country and in every country, when you go out of the valley of one stream and over the divide, you go down into the watershed of another stream. Upon this theory these lands are all riparian to this stream as far as the divide, and when you go farther they are riparian to the next stream, and there are no non-riparian lands and the word "riparian" might as well be wiped out of the books. I cannot conceive that this definition is true; nor do I like the definition in Crawford *vs.* Hathaway, which confines it to the smallest legal subdivision of land by the United States Government abutting on this stream. I submit that it is impossible to define as an abstract proposition what are riparian and what are non-riparian lands. It is just as impossible as it is to say, as an abstract proposition, what is the reasonable use of water where there is not a concrete question presented; and the question as to what is non-riparian or what is riparian is like the question of reasonable use, it must be submitted to the court and the court will say, under all the circumstances, what is the reasonable use, what is riparian and what is non-riparian. It might become a very important ques-

tion in this case. These people in Colorado are taking this water twenty-five miles away from the stream, and Brother Vaile claims that as riparian land by virtue of the common-law doctrine of riparian rights. Now, the case comes to this court, triers of the fact as well as judges of the law, and it will be for this court to say whether that comes within the definition of riparian lands, whether their use is reasonable, and whether the two taken together are entitled to be protected or whether they should be forbidden. Counsel for the Government asserts that the California doctrine would not be a working basis, would not be satisfactory, that you want a stricter rule for the arid lands and the apportionment of water, and that the true rule, therefore, is that of prior appropriation. I say this question of reasonable use is being submitted to the courts every day. The question of what is a reasonable time for the performance of an act where no time is fixed by contract is being submitted by the courts and every day decided to the satisfaction of everybody. This matter has already been submitted to the courts of the arid region and decided, and the courts have had no difficulty in administering that law of reasonable use, that California doctrine, right in the arid States and between irrigators in California, a common-law State, and Nevada, a prior-appropriation State. There was a case where the stream ran from one State into the other; the court held that the proprietors were limited to a reasonable use; it held that the domestic wants were natural wants, but that irrigation was a secondary want, that the domestic wants were superior; it is the case of Anderson *vs.* Bassman, with which this court is familiar, and the court goes entirely through this question of the doctrine of prior appropriation and State lines and State rights and all that sort of thing. The controversy in some ways is exactly like this question before the court here today, eliminating the question of the underflow; and the court apportioned

the water of that stream between the irrigators in California and Nevada, and it apparently was satisfactory, because the case was never appealed.

On Sand creek, between Colorado and Wyoming, one of the last opinions which Judge Hallett ever wrote before leaving the bench, in the case of Hoge *vs.* Eaton, the court did the same thing, apportioned the stream, telling them in Wyoming how much they could have and in Colorado how much they could have; also, in the Decker case, in Wyoming. Of course, your Honors will recall the case of Pine *vs.* New York. I was amused when counsel suggested that if our doctrine was allowed to prevail a man holding forty acres of land in Colorado could hold up a Government project in Colorado unless he got ten million dollars for it. Why, in that very Pine case, in which the Federal court wiped out the State line between New York and Connecticut and gave the plaintiff his remedy, the court approved the law, but denied the injunction because the man had been guilty of bad faith, and sent the case back with instructions to refuse the injunction, but to go ahead and ascertain and assess his damages in that case, and I suppose that could be done in any case; but, as a matter of fact, under the doctrine we desire, the doctrine of reasonable use, the Government could be taken care of, Colorado and Kansas could be taken car of.

There is an observation of Mr. Vaile which I think it important to answer. Of course, counsel for Colorado have painted in the darkest terms the horrible depression that will follow any judgment in favor of Kansas and against Colorado, Well, that is an old trick of the lawyer. I never went after an injunction in my life before a court that the lawyer on the other side didn't attempt to show to the court that it would ruin his client, even a temporary injunction. It is a part of the game to magnify the damage contemplated. Now, what is the truth about it? Brother Vaile says there is no proof of wastefulness in the use of water in

Colorado. Why, two of their own experts on the stand testified that they were wasteful in their methods. One of our witnesses testified that he went out under a ditch there and turned off the road onto a field of Buffalo grass and his team went down nearly all over, and he asked why it was. They told him that was where they turned the water loose at the end of the ditch. There is, I venture to say, not a ditch in Colorado that has a return flow to the Arkansas river. They simply turn it loose and let it go.

Now, I am not sure that this is in the record, but it will be found in every standard encyclopedia, and that is that in California one second-foot of water irrigates two hundred and fifty to five hundred acres of land; in Colorado, 1.44 second-feet in the earlier water rights and one second-foot in the latter water rights irrigates but 80 acres. In other words, in the semi-humid climate of eastern Colorado, as it is becoming, they are employing four or five times as much water to irrigate the land as they employ in California. They practice wild flooding, the most wasteful, antique method. California is using it economically; Colorado is wasting the water. They have got it all; they keep it all and if they cannot use it beneficially, they throw it away, and the purpose of this suit is, not to destroy Colorado's industries, but to make her get out of the trough.

This is important and pertinent to this inquiry for this reason: At times they have vast quantities of water; at times the river is low and they have less. They accommodate themselves to the change of conditions. I do not presume this court is going to enter any decree that will be made to take effect immediately, that will shut these head-gates down at once, with no time for preparation, but time will be given them to adjust themselves gradually to this changed condition, which justice and equity demand for Kansas.

I assume, too, that if this middle, or California, doctrine is adopted, which will protect the Reclamation Service and

the Government, the Government will proceed then to improve these interstate rivers, which today it will not do as long as this State-rights doctrine is asserted. And I assume that in a very short time, by the building of storage reservoirs, the flow of that river, by the segregation of the storm waters, will be vastly increased, so that there will be a great deal larger flow in the Arkansas river than there is now, and I know from my own knowledge of irrigation, which is somewhat extensive, practically and theoretically, that there is ample water under those circumstances, if put to beneficial use, to irrigate that whole valley, taking care of the entire community of proprietors, both in Kansas and Colorado. I believe that in the long run it would be better for Colorado, because the Government will spend its money on these great interstate streams; they will have a steadier flow, a more uniform flow, what we desire, even if they do not have at times quite so great a volume.

Now, if the court please, this is a vast case. I presume it is unnecessary to even call attention to what may result in this case, or to what may come as the result of this case, if the question of fact is found in favor of Kansas and it thus becomes necessary for this court to formulate the legal principle which shall hereafter control the interstate rivers of arid America. And I submit, in conclusion, that the middle way is always the safest way, and it is the safest way here; that the California doctrine, the modified common-law doctrine, the doctrine of reasonable use, which will establish that correlation of right and obligation which constitutes the essence of property and which applies to all ownership of property, that that doctrine is the doctrine for this court to adopt.

Over there in the Library of Congress, beneath the statue dedicated to the Law, are these great words of Bishop Hooker: "Of the Law no less can be acknowledged than that her

voice is the harmony of the world." The doctrine for which I contend here is but the flowering of Bishop Hooker's splendid definition. This doctrine will be the harmony of the arid States, will harmonize and adjust the contending and almost belligerent claims asserted in this court, and will harmonize and adjust every interstate controversy as to irrigation rights in all the arid and semi-arid States. If the doctrine for which I contend shall be applied to the interstate rivers of arid America running, most of them, mark you, out of arid States into sub-humid States, I believe that the entire Arkansas valley will be one of the most magnificent countries of the world; that under this doctrine arid America will support a vast population, because this doctrine will put to beneficial and working use every drop of water that falls on the Rocky mountains, from Canada to Old Mexico. It is the only doctrine that will. No other will do justice, no other will apply the beneficial force of nature as will this. It will give equality of right instead of monopoly. On that proposition we stand, equality as against monopoly, and with this we submit our case to the court.

ORAL ARGUMENT OF CLYDE C. DAWSON, OF COUNSEL FOR COLORADO.

Mr. DAWSON: May it please the court, as counsel representing Colorado, who examined most of the witnesses in this case on behalf of Colorado, I have been allotted certain time in which to discuss, as far as my time will permit, the facts as they appear to us.

Before entering into a discussion of these facts, it would seem entirely proper for me to call attention to the questions that were propounded by the court at the time of the ruling on the demurrer in this case, and suggest the answers thereto as drawn by the representatives of Colorado from the evidence introduced in the case.

We have not, during the development of the case, in the examination of the witnesses, and from a reading of the briefs of the complainant, nor from listening to the oral arguments that have been made so far, discovered that counsel representing Kansas have attempted to give any definite answer, or to express any definite views in answer to the questions propounded by this court at the time that ruling was made on the demurrer. In attempting to answer these questions, I do not wish to take up their discussion, but simply to lay the foundation for the argument which is to follow, both by myself and other counsel.

The first question propounded by the court at the time of that ruling was:

Whether Colorado is herself actually threatening to wholly exhaust the flow of the Arkansas river in Kansas.

There is an entire absence of evidence by the complainant showing or tending to show that Colorado is, in fact or in contemplation, actually threatening to wholly or at all exhaust the flow of the Arkansas river in Kansas or any other place, while the evidence offered by the defendant establishes the fact beyond question that Colorado as a State is taking

no water from the Arkansas river and is not threatening to do so in the future.

Mr. Justice BREWER: It is taken by corporations which are created by Colorado?

Mr. DAWSON: Yes, sir. This question, if your Honors please, was limited, as I understood it, by this word,—whether Colorado is *herself* taking the water; and that question was undoubtedly propounded because of the fact that in the original bill of Kansas, as well as in the amended bill, it was alleged that Colorado, by an appropriation of its legislature, had provided for the construction of a large ditch to be built by convict labor and to be operated by the State directly.

Mr. Justice HOLMES: Is the question you refer to in the reports?

Mr. DAWSON: The questions are in the opinion as rendered by Mr. Justice Fuller upon the demurrer, and I am attempting to answer them as we see it from the evidence, thinking it is due to the court to endeavor to answer those questions; and we say that Colorado as a State is taking no water and is threatening to take no water.

The second question was:

Whether the "underflow" is a subterranean stream flowing in a known and defined channel and not merely water percolating through the strata below.

This subject is one requiring expert knowledge and careful investigation. The complainant, the State of Kansas, introduced in this case no witnesses who claimed to be, or were in fact, experts upon this subject, while the State of Colorado and the intervenor, the United States Government, introduced numerous witnesses who had made long and exhaustive study of the subjectof underground waters, who had studied the particular conditions existing along the Arkansas river, and arrived at the unanimous conclusion (and so stated in the evidence) that the underflow which counsel for Kansas claims furnishes the sub-irrigation was not a subter-

ranean stream flowing in a known and defined channel, but was in fact merely water percolating through the strata below. That, I think, is borne out by the evidence, beyond question, and is in answer to the second question propounded by this court.

The third question is:

Whether certain persons and corporations in Colorado must be made parties hereto.

This question has in part been answered by the complainant making, in its amended bill, various corporations in Colorado parties defendant; and if the complainant seeks any decree in this case which shall attempt to adjudicate any rights as between ditch owners in Kansas and in Colorado, or rights based on the doctrine of priority of appropriation, then we believe it is clearly established by the evidence that still other parties and corporations, both in Colorado and Kansas, will be necessary parties to this suit; and the question would then arise, by their having brought in these corporation defendants, whether the jurisdiction of the court has not thereby been ousted.

The fourth question is:

What lands in Kansas are actually situated on the banks of the river?

I am not able to say exactly what lands are expected to be covered by the terms of this question. If it means those lands which might be affected by the flow or lack of flow in the river,—the surface river,—then it is established by the testimony of experts introduced both by Colorado and the intervenor, that the maximum acreage which could possibly be affected by such flow would not be in excess of 72,240 acres, and in all likelihood the amount would be very materially less. And of these acres which might possibly be affected, the greater number would be situated along the valley of the Arkansas river, in that part of the State of Kansas where the testimony shows that the rainfall is ample to produce crops without relying upon any other source of moisture.

The fifth question is:

What lands, either in Colorado or Kansas, are absolutely dependent upon water therefrom?

As to the lands of western Kansas depending upon water from the river for irrigation, it is impossible to say from the evidence in the record, because of the fact that the complainant offered no evidence showing the amount of land actually under irrigation in western Kansas, and the testimony generally shows that the ditches in western Kansas had been so poorly managed as to be effective for a very small part of the lands actually lying under them, and that in many instances these ditches and their use had for many years been abandoned. Along the Arkansas river in Colorado there are now at least 350,000 acres of land actually under irrigation and cultivation, which are absolutely dependent upon the waters of this river to make them productive, and the lack of water from this river for any number of years would return these highly improved lands to the desert.

The sixth question is:

The extent of the drainage area of the Arkansas river.

The drainage area of the Arkansas river in Colorado (and I think this is important) is 26,000 square miles, and in Kansas 20,000 square miles, and outside of these two States 140,000 square miles, making a total drainage area of 186,000 square miles.

Mr. Justice WHITE: When you say outside, you mean as well below Kansas as above?

Mr. DAWSON: Yes, sir; all of the drainage area outside of those two States, both to the south and to the north.

The seventh question is:

The possibility of the maintenance of a sustained flow through the control of flood waters.

The answer to this question would depend largely upon the definition given to flood waters. If the term shall be construed to mean high water, or a flow of water in excess of the normal, then a sustained flow can largely be maintained by the storage of such waters in reservoirs, and, better still,

by their application by irrigation to the lands lying toward the head of the stream, the soil in itself acting as the best reservoir and the greatest equalizer of the flow of the stream below the point of application to the soil. If the term, on the other hand, shall be construed to mean excessively high water, such as comes in the mountains in cloud-bursts and violent storms upon the headwaters of the Arkansas river and its tributaries, then such flood waters cannot to any great extent be controlled until they have passed out beyond the mountains, and possibly beyond the Colorado-Kansas line,—this because of the fact that in the upper reaches of the river the fall is so great that the violence with which the waters run off in the streams is more or less destructive to headworks constructed for the purpose of diverting water from the stream, and because the waters so falling run by in such an extremely short space of time.

Those, if your Honor please, are the answers to the questions suggested by the court, as we understand them.

From the day when this case was begun, counsel for Colorado have looked upon it as one deserving of the most serious and careful consideration, this not because of any doubt of the justness of Colorado's position in the matter, but because of the tremendous possibilities for evil which would result to Colorado, and to the nation at large, if the contention of our sister State of Kansas should by any possibility be upheld by this court. The entrance of the decree prayed for by Kansas in this case, and its enforcement for a few short years, would be the practical annihilation of Colorado as a civilized State, for as water is a necessity to the life of a thirsty individual, so also is it a necessity to the thirsty soil of the arid region; and a prohibition of its use for irrigation in Colorado would, in less than five years, drive from her borders nine-tenths of her population, and return to the desert over two and a quarter million acres of land now as productive, acre for acre, as any like amount of land in the United States.

Throughout the taking of evidence in this case we have felt that counsel representing Kansas have failed to appre-

ciate the gravity of the situation, have failed to realize the possibilities for harm in that which they asked, and hence have failed to treat the case with that degree of broad-minded fairness which so important a matter deserves. We have felt this because of the character of the evidence offered by complainant, because the witnesses chosen by them seemed to be men without any special qualification or fitness to speak upon questions involved; because of the method of examination, which in almost every instance was objectionable, in that it was leading and suggestive in the extreme. The same method has been followed by Kansas in her opening brief on final hearing, in that counsel assume many essential facts as proven which no fair-minded person could say from the evidence had been established; because they quote only such parts of the evidence as suit their purpose, and entirely ignore modifying statements made by the same witnesses upon cross-examination; because from their statements as to evidence and facts established thereby they almost entirely omit all consideration of evidence offered either by the defendant, the State of Colorado, or the intervenor. So far as their opening brief is concerned, one reading it might, with a few exceptions, suppose that no evidence had been offered in the case by any one except the State of Kansas.

Character of Witnesses Introduced by Parties.

In view of the fact that this court had no opportunity to see and hear the witnesses, it seems to us both important and proper to call attention to the difference in the character of the witnesses introduced by the complainant, the defendants, and the intervenor. In judging of the value of the testimony given by the witnesses, it is well to bear in mind at all times that many of the questions involved in this case are of a character requiring for their understanding long and careful study, a high degree of intelligence, and in many instances what might properly be termed expert knowledge.

The difference in these witnesses can be typified by taking

the three witnesses chosen to open the case for the respective parties.

Kansas opened at Wichita by introducing that old political and newspaper war-horse, Hon. M. M. Murdoch, who on the witness stand vaingloriously claimed the credit for the beginning of this suit, saying:

> "Then I commenced the racket in the newspaper that brought about the contention here today."

And again, speaking of the navigability of this river, which in Kansas appears to have been navigable for purposes of appropriation only, he says:

> "Senator Plum and myself, and one or two other fellows, got up a scheme of running a fellow for Congress from Topeka from this district down here,—a gerrymandered district that I got through the Senate myself, to get the support of the people down here for the fellows up there. The advocacy of the navigability of the Arkansas caught them."

Whether this witness, who is responsible for this suit by the "racket" in his paper, is any more sincere in urging that the irrigation in Colorado injures the agricultural interests of Kansas than he was in the earlier days in urging that the river was navigable for the purpose of electing his favorites to office can only be judged by a careful reading of his testimony. Certainly, as to the navigability of the stream, he never believed in the cause that he preached, because he quotes General Grant as saying:

> "That the Arkansas river would be navigable from this city (Wichita) to its mouth, if they would copperline it, and I guess he was about right."

One active man, with a daily newspaper, can create a good deal of disturbance and cause a great deal of trouble; and this witness says:

> "I think it was about fifteen or eighteen years ago that I took it up" (meaning the subject of this suit)

> "in my newspaper, and I kept whacking it along pretty nearly every week."

And the cavalier manner in which this witness says that

> "if it (this question) ever reached the Supreme Court, it would stump the Supreme Court or anybody else,"

is at least refreshing, if not instructive. This star witness for Kansas, drawing upon the fund of his large newspaper and political experience, attempted to cover practically every subject in this case,—the Arkansas river and its peculiarities, the underflow and its vagaries, where the water for this underflow came from, how deep it was, and how much there was of it, why it was more at one time and less at another, who should be permitted to irrigate and who not, and all of the other great questions that might go to the making or undoing of the State of Kansas or of Colorado.

In contrast with this, the first witness put upon the stand by the State of Colorado was Louis G. Carpenter, State Engineer of Colorado, a graduate of the Michigan Agricultural College in the class of 1879, doing post-graduate work in both the universities of Michigan and Johns Hopkins of Baltimore, who came to Colorado in 1884, and for twenty years prior to the time of giving his testimony had made a special study of irrigation and water problems generally; one who for all this time had been in charge of the irrigation investigations conducted by the United States Experimental Station located at the Agricultural College at Fort Collins; one who for all the years of his residence in the State had been a teacher in this school; the first man to occupy a chair of irrigation engineering in any college in the United States, and who developed and gave the first course of instruction in that important subject within the country, a man who has visited and studied the conditions in every arid and semi-arid State and Territory in the Union, who has visited Europe and the countries of ancient civilization for the purpose of broadening his knowledge upon this subject; one who be-

fore testifying in this case, with the aid of a well-equipped field party, made a careful and exhaustive study of the conditions existing along the Arkansas river in both Colorado and Kansas.

Showing the same contrast is the first witness called by the intervenor, the United States,—Clarence T. Johnson, State Engineer of Wyoming. Here we have put forward to speak for the United States Government in this matter one who, as we might expect, is worthy to be heard by reason of his long study of the questions involved, one who has studied the subject of irrigation, and questions pertaining to water and the flow of streams in all of the arid States of the west, and who has carried his investigations into Egypt and the countries of the old world.

These witnesses are not selected because *they* particularly show the broad contrast in the witnesses produced by the parties to this litigation, but because they are typical, each representing fairly, on the average, the class of witnesses called by the side that put them forward. For the complainant, we have the newspaper man, claiming for himself and his paper the credit of initiating this suit, hoping no doubt for a "scoop" so that he may cry "The *Eagle* did it!" the politician whose son is today a member of Congress from the State of Kansas,—playing upon the feelings of State pride. For the defendant, the trained scholar and investigator, who has given twenty years of his life to the study of exactly such questions as are involved in this suit, a representative of the Federal Government in the Agricultural Department, and recognized as an authority upon questions within his line wherever such questions are up for consideration. For the intervenor, the State Engineer of Wyoming, an expert in the best sense of the word upon matters of interest to this court in this proceeding.

This is no mere distinction without a difference which we have been pointing out; it is material and vital, and in my judgment might well prove a controlling factor in this case. It shows the standpoint from which the parties have ap-

proached the questions here involved,—questions which may in the future affect the lives of from fifty to a hundred million citizens of this country, and two-fifths of the area of the United States.

Description of the Arkansas River and its Drainage Area.

The rivers which head on the eastern slope of the Rocky mountains, and proceed thence out onto the great plains, formerly called the American desert, have their birth in and proceed through a country so different from that familiar to the dweller of the United States east of the Missouri river, that the knowledge of rivers obtained by one thus situated is of little value when applied to streams of the character of the Arkansas, found in the country mentioned. In fact, such knowledge, instead of being helpful, if relied upon would prove misleading and harmful in the consideration of any question in which the peculiarities or characteristics of one of these arid country streams was involved. For this reason, I desire to give some description of the Arkansas river and its drainage in Colorado and Kansas.

The Arkansas river heads at an elevation approximating 11,000 feet above sea level, just under the summit of the Tennessee pass, above Leadville. This country immediately about the head of the river was, prior to 1880, a heavily timbered country, well adapted for holding the great snowfall of the winter, and allowing it to escape gradually down the stream. Since the discovery of the mines at Leadville, the headwaters of the Arkansas have been practically denuded of their timber by the axe and by forest fires, so that the moisture that now falls in that section runs off much more rapidly than in the early days.

From its source the river proceeds through a mountainous country to Cañon City, a distance of about 120 miles, where it leaves the mountains, after passing through the far-famed Royal gorge. The last sixty miles of its course through the

mountains is, however, through a character of country which is very light in its production of water, so that there is only about sixty miles at the very headwaters of the stream that drain a country which really furnishes any considerable amount of water.

After leaving Cañon City, the river proceeds through some low foothills, and finally reaches the plains country at about Pueblo. All of this part of the river from Cañon City down is of a character which in its natural condition would furnish very little water to the stream. In fact, it is testified by Professor Carpenter (who has conducted many measurements on the river) that in its natural state it would be a losing stream from Cañon City to the State line. The total length of the river in Colorado is 357 miles. The average precipitation in the State of Colorado is 14 inches per annum. The territory drained is 26,000 square miles. That above Cañon City, or in the mountainous country, is only 3,000 square miles. The average flow of the stream at Cañon City is a little less than 750 cubic feet per second of time, including both high and low water, as measured for a period of 16 years.

From these facts it may be seen that while the Arkansas river as a whole is one of the longest streams in the country, and drains a large territory when taken together; that its drainage area in the State of Colorado is comparatively small, is in a country of low precipitation, and but a small amount of it lies in the high mountains. One in looking at a map of Colorado might naturally be misled into believing that this stream, like those in the humid regions, gained in size and importance as it proceeded on its way through the State of Colorado; but this, as a matter of fact, is not true. Perhaps nine-tenths of the streams marked upon maps of Colorado are nothing but dry channels, commonly called "sand, or dry, creeks," channels which have no water flowing in them except in times of excessive rainfall, such as cloudbursts.

From what has been said, it will be seen that the flow of the Arkansas river, about which Kansas is contending,—

that is the flow that would cross the State line dividing Colorado and Kansas, would be necessarily less on the average than 750 cubic feet per second of time. From the source of this stream until it reaches the State line, the fall, taken together, is a rapid one. At the head, it is little less than a cataract, growing gradually less as you proceed eastward. Most of the distance the channel is narrow, underlaid with bed rock, and in many places filled with large boulders. Shortly before reaching the State line the channel begins to widen out, the bed grows sandy and the banks low, and the fall is materially decreased, so that by the time the stream has proceeded into Kansas for a short distance the fall will not average over seven feet to the mile, the banks three or four feet in height, and the width from 1,000 to 1,500 feet, the bed nothing but a shifting sea of sand. That is why it is that everybody of observation, from the time of Zebulon Pike down to the present day, has marvelled at finding the Arkansas river in western Kansas a river of sand instead of a river of water, when at the same time it was an ever living stream in Colorado.

Proceeding into Kansas, the river flows for 310 miles through that State. Until you have proceeded some 150 or 200 miles there are very few contributing streams, but after this distance has been traversed, you are reaching the conditions of the humid country where the rainfall is in excess of 20 inches per annum; and the stream then takes on the characteristics of rivers in the humid or eastern part of the United States.

Speaking in round numbers, the annual precipitation in the State of Kansas is 25 inches; the drainage area of the river within that State is 20,000 square miles, so that it may readily be computed that the actual water which falls within the drainage area of the Arkansas river in the State of Kansas is almost 1½ times the amount that falls upon the slightly greater drainage area of that river within the State of Colorado; in other words, 25 inches of precipitation over 20,000 square miles of territory, gives a greater volume of

water than 14 inches of precipitation over 26,000 square miles; and in addition to this, it must be borne in mind that as you increase the inches of precipitation, the run-off or that which goes to make streams, increases much more rapidly than the precipitation—that is to say, double the precipitation will give much more than double the run-off, so that as far as these two States are concerned the State of Kansas, as a matter of fact, gets more water in the Arkansas river from its own drainage than all of the water that could possibly come to it from the Arkansas river of Colorado, if all of the run-off of the drainage area in Colorado were allowed to go to them without any sort of diminution by artificial means. The Arkansas river is aptly characterized by Professor Carpenter as a "broken river," in which characterization he is confirmed by Willard D. Johnson, who has been with the Geological Survey since 1879. These two witnesses, the former introduced by the State of Colorado and the latter by the United States Government, had made a special study of conditions in the Arkansas valley, in the State of Kansas, and spoke with knowledge upon the subject which they were discussing. The investigation made by Mr. Johnson was made long prior to the commencement of this suit, and the character of this river so impressed itself upon him that in preparing a map showing the Arkansas valley through Kansas, in his work or report called "The High Plains and their Utilization," he shows the Arkansas river for a considerable distance in western Kansas by a dotted line, and explains that he meant thereby to convey the idea that throughout that distance of something like 150 or 200 miles, the Arkansas was in fact an intermittent stream; that this was simply the channel uniting what might properly be called the Colorado-Arkansas and the Kansas-Arkansas, and he states fully and completely that during times of ordinary flow in the Arkansas river there is practically no relation between the upper river and the lower river, and that this part which he has marked as an intermittent stream is simply a channel kept open by and for the purposes of conducting water from

the upper to the lower river. The same view in regard to this river is expressed by Prof. F. H. Newell, chief engineer of the Reclamation Service, introduced by the Government, and one who for years has been prominent in the service of the Geological Survey of the United States. To like effect is the testimony of the experts, N. H. Darton and Professor Schlicter, introduced by the Federal Government.

Colorado was not content, however, to rest with the testimony of these experts as to the character of the stream and as to what might be expected in reference to the flow of the river through western Kansas. It seemed to us that the court was entitled to know, not alone what this river might be expected to do, but what, as a matter of fact, it had done ever since it had been known to the white man, and this particularly in view of the fact that a number of Kansas citizens were called by the complainant, who stated in general terms that the flow of the Arkansas river in Kansas from 1860 to 1894, was a reasonably constant flow. There were 54 witnesses introduced by Kansas, who in chief and generally in answer to leading questions, made a statement of this kind. Nine of these on cross-examination, however, admitted having seen the stream dry within the State. To overcome this, and to show that the river had in fact done that which it might from surrounding conditions be expected to do, Colorado introduced 115 witnesses, about 50 of these from the State of Kansas, who among them testified to having seen the river dry in every year from 1855 to 1893, unless it were the year 1881, which was a year of exceptionally heavy rainfall; and further than this we were able to show, from the diary kept by Zebulon Pike in 1806, that he found the river dry in that year. In the writings of other travelers and explorers, including Francis Parkman and Edward Everett Hale, we were able to find statements showing that the river was dry in the State of Kansas in the years 1819, 1833, 1839, 1840, 1846, and 1851.

Mr. Justice HARLAN: Substantially between what points?

Mr. DAWSON: Substantially between somewhere about Lamar, in Colorado, and about what is now Great Bend. Not always for the same distance—sometimes fifty and sometimes a hundred and sometimes a hundred and fifty or two hundred miles, and running for about that distance.

The earliest date which Kansas claims in her brief that the irrigation had any effect upon the river in Kansas was 1888 or 1890, so that it will be seen that the facts, as shown by the statements of the witnesses above referred to in regard to the river in its natural state, bear out the conclusions of the experts introduced by Colorado and the Federal Government, that this is a broken or double river, and that the upper river has practically nothing to do with the flow in the lower river except in flood time.

Mr. Justice DAY: If it will not divert you more than a minute, can you state very briefly what is the law of Colorado regulating, in that State, this use of water? Have you a statute there?

Mr. DAWSON: I can just state that it is regulated by priority in time, that priority in time gives priority in right.

Mr. Justice DAY: The first man can take it all if he wishes?

Mr. DAWSON: The first man can take it all if he gets to it, as long as he puts it to a beneficial use, and his right may always be limited or may be lost to any extent by failure to apply it to beneficial use.

Mr. Justice DAY: There is no scheme of apportionment in your law?

Mr. DAWSON: No, sir.

Mr. Justice DAY: It goes to the man who gets the claim on the water?

Mr. DAWSON: Not a claim on the water, but who appropriates the water by taking it out of a stream and applying it to a beneficial use.

Mr. Justice DAY: Is there any rule of priority in beneficial use?

Mr. DAWSON: There is a rule of priority in the fact that the domestic rights have the first right, irrigation second, and manufacture third.

In view of the evidence above referred to, showing that this stream had been actually dry in every year, with the possible exception of one, from 1855 to 1893—that is, for thirty-eight consecutive years, with the one exception mentioned—it would appear extraordinary to any one not acquainted with the method pursued by counsel for Kansas in this case to find in their brief, at page 32, the following statement:

> "The flow of the Arkansas river prior to the time when the waters were diverted for irrigation purposes in Colorado, about the year 1890, covering a period of time beginning with the earliest records, information or observation of witnesses, was as constant and uniform as the flow of an ordinary river."

Do counsel for Kansas expect this honorable court to ignore all or a majority of the witnesses introduced in this case? Do they expect this court to take their statement, without ever looking at the record? Or do they assume that the court will overlook the reasons as to why this is a dry stream in western Kansas, given by Prof. Carpenter, Willard D. Johnson, Prof. F. H. Newell, N. H. Darton, and Prof. Schlicter? Do they expect them to set aside and hold for naught the statements of explorers such as Pike, Coues, Flint, Parkman, Garrard, and Beckwith, who made their explorations and set down in all truth their observations long before Kansas had commenced to bleed or counsel in this case had attempted to relate her woes? Do they expect the court to overlook the fact that at least fifty of their own best citizens, farmers living along the Arkansas valley, in Kansas, have testified to having seen this stream absolutely dry year after year, before Colorado commenced

to irrigate to any considerable extent? Do they expect the court to minimize or discredit the statements of army officers, scouts, travelers, and pioneers, who came up the Arkansas river on the old Santa Fé trail in the early days, and who were impressed with their first view of this river because it was one without water? Witness after witness called in this case has testified that they had seen the Arkansas river dry in western Kansas, before Colorado irrigation had assumed any considerable proportions, for 50, 100, 150, and 200 miles of its course; that they had to dig in the sands of the bed to get water for domestic use and to satisfy the thirst of the stock which they were driving; and their own witnesses have testified of years when the stream was so dry that the buffalo left the country by thousands; and yet they say to this court that in the early days the river was as constant and uniform in its flow as the ordinary river. They quote William Matheson (who says that he is the only true "Buffalo Bill" and that all others are spurious) for the purpose of showing that this river had in early days a constant flow, but they fail to call the court's attention to the cross-examination of this witness, where he says that he saw the river dry in 1860, 1863, 1865, 1874, 1879, and 1880, thus giving six years in the twenty preceding 1880 when he actually saw the river in western Kansas dry. No other single witness introduced by Kansas has testified that he ever saw the river dry in any greater number of years in the twenty following 1880. We have no doubt that the Arkansas river has been dry in many years since 1880. We have no doubt that it will be dry in many years of all those that are yet to come, but we do protest most strongly against counsel for Kansas in their brief saying that this river, before Colorado had used it for irrigation, had a reasonably constant flow, such as rivers in general have. All of the evidence in this case goes to show that that is not the fact, and nobody who heard the witnesses

testify could for a minute believe that this statement actually portrayed the facts as brought forth by the evidence; and we contend that a reading of the evidence will show that, as a matter of fact, this river has gone dry less often and has been dry for a shorter time, since the Colorado ditches were fully put into operation, than it ever was in a like period of time before, since it has been known to civilized man—this, because of the fact that the irrigation of the lands has furnished a storage for the excess waters and has returned them to the stream at a time when it would otherwise be dry.

(Adjournment for lunch.)

It has been testified in this case that ultimately 60,000,000 acres of land can be redeemed by irrigation, and that irrigated lands will support from three to five times the population that can be supported by the lands in the humid States, so that it would certainly support, as testified to, one person to the acre, or sixty millions of people; so I feel some hesitancy in trying to discuss in sixty minutes a subject involving 60,000,000 acres of land, the future home of 60,000,000 people. A million to a minute seems a little short.

Flow as Good as in Earlier Years.

To enlarge somewhat upon this idea that the flow has been as good since Colorado completed her irrigation system as it was in the earlier years, we will first call attention to the testimony that was taken by Colorado in the State of Kansas, the witnesses being selected from among her own people. We think the court will realize that Colorado was naturally in a difficult position when going into the State of Kansas for the purpose of getting witnesses to establish the contentions of the defendant, and yet we had no difficulty in finding within that State, among the very

best farmers living along the Arkansas valley, from the Colorado-Kansas line on the west, to the Kansas-Oklahoma line on the south, 80 witnesses, at least 90% of whom testified that the average flow of the Arkansas river in the State of Kansas for the past ten years had been as good as in any ten-year period previous to that time, since they had known it. Kansas had introduced some 50 or 60 witnesses who had attempted to say that the flow of the river had been much impaired. This was one of the propositions that they undertook, by their bill and in the opening of their evidence, to establish, and we simply called enough Kansas witnesses to, in our opinion, override and overcome the testimony that had been offered by the complainant. For instance, at Witchita, Kansas introduced in chief 16 witnesses, who said that the flow of the river had been impaired. Colorado introduced 20 who said that it had not, and so the list might be enlarged up and down the river, at all of the principal towns through the State.

We wish, however, to call attention to the statements of some few of these witnesses introduced by us as typical. Among these witnesses was John Williams, living about half way between Hutchinson and Wichita for 32 years prior to the time when his evidence was given, owning 3,000 acres of land, with five miles of frontage on the stream, who testified that he could see no change in the flow of the river in the last ten years as compared with the ten years immediately succeeding 1870; and the witness E. W. Phillips, ex-member of the legislature, resident of Winfield, who says he was acquainted with the river since 1870, and that the flow of the last ten years was as good, on the average, as in the ten years that he first knew it.

The statements of these Kansas witnesses that the river has not been adversely affected by the taking of water for irrigation in Colorado, and the theory of the experts that the flow in the upper river has practically no effect

upon the flow in the lower river, is borne out by the disinterested witnesses introduced by the United States Government upon the question of navigation. Maj. William L. Siebert, in the Corps of Engineers, in the U. S. Army, a graduate of West Point, testified in effect that he made a study in respect to the effect that irrigation along the river had upon navigation where he was stationed; that his deductions therefrom were that he could not establish, from records and history or any data that he could obtain, that the low-water discharge of the river had been decreased in consequence of irrigation; that from his investigation the stages of the river in its navigable portions are determined by the rainfall almost entirely, from points in Kansas down to the mouth of the stream; that he had made a report in respect to the effect of irrigation upon the upper portions of the river to the Chief Engineer of the U. S. Army. He further said that his conclusion from his investigation would be that when he was at Little Rock the river was as good for navigation as it had been between 1860 and 1870; that he did not discover anything in regard to the flow of the river west of the Colorado line that would materially affect the navigability of that portion of the stream that was considered navigable.

The witness Drake said he had been boating upon the river from 1855, and that he thought the volume of water in the river was about the same now as then.

P. R. Van Frank, Jr., says that he made some of the investigations upon which the report of Major Siebert was based, and that he could discover nothing showing that the irrigation in Colorado had any effect upon the flow of the river at the head of navigation. He says that in his report to Major Siebert he stated:

> "The statements of channel depths covering a period of 150 years, do not show that these depths are decreasing."

These are impartial witnesses—witnesses interested neither upon one side nor the other; trained observers, men who are making their investigations for other purposes, and yet their statements furnish the strongest reason for saying that citizens of Kansas called by Colorado were stating the facts correctly when they said that irrigation in Colorado had not affected adversely the flow of the Arkansas river in Kansas, because while it is true that there might be some slight effect apparent in western Kansas which would not appear at Little Rock, yet if it is true, as Kansas contends, that Colorado during the summer season takes all of the flow of the Arkansas river in Colorado, and that this flow, if allowed to go, would materially increase the flow of the stream as far south as Wichita, then it would also necessarily increase the flow of that stream at Little Rock, Arkansas, because when the river has once reached a point as far south as Wichita it is fully within the humid regions, where it suffers no unnatural losses; and if no such effect appears at Little Rock, then it must follow, as the Kansas people called by us say, that no such effect is observable in the State of Kansas. At best, Kansas certainly could not ask an injunction against our taking the waters of the river because of the fact that she had introduced some 50 or 60 witnesses who said that our doing so had affected the flow of the river in that State, when an equal, or, in fact, a greater number of her own citizens said that it had not. Before any such relief would be granted the proof should be clear and unanswerable. We are not here in a position as though it was a conflict between witnesses of different sides. While technically this may be the position, yet it is more as though it were a conflict between witnesses on the same side, for here we have a given number of witnesses residing in Kansas, introduced by Kansas, who say that one state of facts is true; another set of citizens residing in Kansas called by Colorado, who say that that state of facts is not true, thus making an absolute and irreconcilable conflict between the citizens of the State which here appears as the complainant.

Mr. Justice BREWER: The river runs through the Royal gorge?

Mr. DAWSON: Yes, sir.

Mr. Justice BREWER: Is there any testimony to show that it was ever dry as it came through that gorge?

Mr. DAWSON: There is not a word, if your Honor please, of testimony to show that this river ever in the history of the world went dry west of Pueblo in Colorado, forty-five miles below the Royal gorge.

Mr. Justice BREWER: You claim it becomes a sort of lost river after it leaves the mountains?

Mr. DAWSON: Yes, sir; it becomes a lost river, because when you take its small flow in the summer season it would probably not be more than two or three hundred cubic feet, and it enters out into the broad bed of sand, into the dry and arid region of eastern Colorado and western Kansas spread out a thousand feet; even if it carried two hundred feet it wouldn't be over two inches deep, or five inches deep if it carried six hundred feet, and it would disappear like a drop of water on a hot stove.

Mr. Justice BREWER: You do not question the fact that there was constantly a river there?

Mr. DAWSON: There was constantly a river bed there.

Mr. Justice BREWER: Take the Missouri river; nobody ever questions the fact that this is a large river, but I have seen it in so small a channel that all of the water flowed between two piers of that Kansas City bridge, a little brook, almost going down. But the fact that it was not a constant river, and that the water almost ran out, does not change the fact that there was a river.

Mr. DAWSON: We do not question it was a river, but we say the character of the river was such that the lower river beyond this point of disappearance is not dependent upon the flow of the upper river; what it has below is gained from the country through which it passes, and if you would take from Colorado the average flow of seven hundred and

fifty cubic feet per second of time, and send it out in the summer time onto that broad bed of sand, you could no more find a drop of it than you could find a drop of water spilled in the Desert of Sahara in the time of the Crusaders. It is gone, evaporated, lost, and if not used in Colorado, would benefit no man.

Mr. Justice BREWER: There is the same kind of testimony before us in the case of the Rio Grande, running through New Mexico.

Mr. DAWSON: Yes, sir. All of these rivers have that peculiarity and that character. They start in the mountains and grow larger until they reach the plains, when they begin to dwindle; and after you cross the arid belt they are again replenished by natural springs and the drainage of the lower country makes a new river, which is kept up, in the case of the Arkansas in Kansas, by the waters falling on the drainage area in Kansas.

Mr. Justice BREWER: Your contention, then, would be that because of the low stage of water at certain times or the absolute cessation of the flow of the river the ordinary riparian rights created by the common law cease as to that river?

Mr. DAWSON: Cease because of the fact that you cannot show there is any injury in taking water which, if it were allowed to run, would not reach the riparian proprietor below. I am not going to discuss, if your honor will permit, the law questions, as these are set apart for other counsel.

REBUTTAL EVIDENCE ON THE FLOW OF THE RIVER.

We thought we had a right to assume, when we had introduced these Kansas witnesses showing that the flow of the river in that State had not been impaired, that the question would be for determination upon the evidence which up to that time had been introduced by the complainant and the defendants. We did not suppose that Kansas would, in rebuttal, attempt to open up this same question which they had assumed to affirmatively establish in the introduction of

their evidence in chief; but we found that again we were in error in judging of the conduct of our friends upon the other side. It was indeed unfortunate, throughout the hearing in the case, that the Commissioner was not clothed with powers to rule upon the evidence. We objected most strenuously to Kansas again on rebuttal going into this question of the flow of the river, and of the other things which she had set out in her bill, and had attempted to establish by her testimony in chief. Of course the objections were at the time unavailing, as all that could be done was to record them. Ordinarily we would not complain of this, and we do not upon any technical ground, but we do say that it is unfair, after Kansas has chosen her position, has gone into her own State, picked out from among her own citizens those whom she desired to rely upon to establish those propositions, that after we had accepted the gage which she had thrown down, and had gone into her own State and taken from among her own citizens witnesses who have overridden the testimony offered by her in chief, she should be permitted on rebuttal to again go back over the same ground and by reason of a feeling of State pride bring together another great horde of witnesses for the purpose of outnumbering those introduced by the defendant. The testimony introduced in rebuttal upon this subject was purely and absolutely cumulative, and nothing else. The speaker took the trouble to pick out and arrange in parallel columns the statements of many of these witnesses introduced by Kansas in chief and on rebuttal, and in some instances they are so nearly alike, partially because of the leading manner of the questions, that if the name was taken from the head of the examination you could not tell which man of the two examined was making the statement. We objected to all testimony of this character, and in some instances absolutely refused to cross-examine the witnesses because the evidence was not proper to be offered in rebuttal. At the end of taking it we moved that it all be stricken out. We here insist, at this first opportunity to have a ruling upon

this question, that in consideration of this case all such evidence be eliminated.

Notwithstanding this fact, we wish, for the purpose of calling attention to the differences in the character of testimony introduced by the different parties to this suit, and as showing the reckless methods resorted to by counsel for the complainant, to call attention to the testimony of some of the witnesses introduced upon rebuttal in regard to the flow of the Arkansas river, that it may be compared with the calm, reasonable, and well-considered statements made by the witnesses introduced by the defendant.

For instance, compare the statements of the witnesses Williams and Phillips, heretofore quoted, with the following, introduced on rebuttal by the State of Kansas. Clyde B. Johnson says:

"The flow has been less in the last ten years."

But we will find, upon examination of the record, that four years of the first ten with which he was comparing the last ten years, he was between the discerning ages of six and ten years, and five of the last ten he was in Oregon.

Again, take the statement of G. L. Chapman, Great Bend, who glibly compares the flow in 1872 with later years. On cross-examination it appeared that the witness in 1872, the time when he commenced to make this valuable comparison, was four years old, and while we are willing to concede that the observing powers of some of the residents of the Arkansas valley in Kansas are quite marked, we are not yet in a position to say that we are willing to be bound by the judgment of a boy of four as to whether the river was flowing more water in 1872 than it was thirty-two years later, when he gave his testimony.

Mr. Justice BREWER: He was quite precocious?

Mr. DAWSON: Yes; quite precocious. There are a good many remarkable things come out of Kansas, but the precocity of some of her witnesses is most remarkable of all.

One can hardly be surprised that it requires a great many witnesses of the character of the two last above quoted to establish any fact which is in controversy. It would almost seem to us that the more of them there were the less convincing would be the evidence; but, perhaps, one of the most extraordinary bits of testimony introduced by the State of Kansas for the purpose of showing the large volume of flow in the Arkansas river, in the vicinity of Wichita, in the early days, was their Exhibit A-52, which was offered in evidence, not in chief, but on rebuttal, under objection, and is the photograph of a picture of a drawing of an imaginary herd of cattle swimming an imaginary river; and even Kansas' own witnesses disagree as to whether the artist was a man of good imagination; the witness Joseph G. McCoy expressing his view that it is a fairly good representation, while the witness J. R. Meade, one of the most intelligent introduced by Kansas in rebuttal, says in substance that he has handled a great many cattle, swimming them across the river from time to time, and that he never saw anything like the scene in the picture introduced by Kansas. Of course this picture of a herd of cattle swimming the river doesn't prove, and doesn't tend to prove, anything. In the early days there were no bridges, and if there were none now, there are plenty of witnesses in this case who have testified that during times of high water you would have to swim cattle now just the same as you did then, and if the river was as high as it was at Wichita, just prior to the time when we commenced taking evidence in this case, the difficulty would be to find a Texas steer strong enough to swim all the way across it. Certainly the citizens of that progressive town would not at that time have been much afraid of being run over by the cattle, for most of them were in the second stories of their houses or in the tops of trees, notwithstanding the fact that Colorado was taking all of the water that she could get out of the Colorado (not the Kansas) Arkansas.

Narrowing Stream, Islands, and Growth of Trees.

Kansas resorted to still another line of evidence for the purpose of showing that the flow of the Arkansas river in Kansas had been diminished since the completion of the irrigation systems in Colorado. This evidence might properly be divided into three subheads, all of which claimed to show a lessened flow in the river in late years: First would be the narrowing of the channel of the stream; second, the growth and increase of islands in the channel, and, third, the growth of trees along the stream and upon these islands.

I do not intend to devote much time to any of these three heads, because a study of the evidence will show that the narrowing of the stream is largely accounted for by the actions of the citizens of Kansas themselves. It was testified by the witness Murdoch and by many other witnesses called at Wichita that the stream had been artificially narrowed at that point from 300 to 500 feet by filling in on the sides, and that this grew out of the desire on the part of the people to acquire more land. This desire seemed to be prevalent throughout Kansas, for we find the farmers all along the river filling in between islands and the main land for the purpose of attaching the former to their holdings. Mayor Frizzell, of Larned, testified to gaining something over 200 acres in this manner, so that it is not at all extraordinary that there has been a general narrowing of the channel throughout the course of the river in Kansas, even though the flow of the river may have been as great in late years as formerly. The testimony further shows that within the last ten or fifteen years there has been an immense increase in the acreage put under the plow in the valley of the Arkansas in the State of Kansas. It needs no quotations from the evidence to show that this great increase of plowed land would furnish a large amount of sediment, which would have a tendency to fill up and narrow up the stream throughout that State.

The growing of trees upon the islands and along the banks of the stream is readily accounted for by the citizens of Kansas, among them, Joseph Timmons, of Dodge City. These witnesses state how, in the early days, the valley of the Arkansas was a treeless plain, overrun every season by prairie fires, which killed off all young trees started along the banks, and, in many instances, even upon the islands, for it must be remembered that at the time of year when prairie fires rage, the Arkansas river, in Kansas, has been in the habit of furnishing too little water to put out a camp-fire, let alone a prairie fire. The buffalo also were instrumental in keeping down all growth along the stream. In the early days, we are told that this great animal roamed over the plains in droves of thousands, crossing and recrossing the Arkansas river, and trampling down and killing off all underbrush and growth which attempted to start along it. We are not only told, however, that the flow of the river has been less in recent years, but counsel, in the introduction of evidence, attempted to specialize and show that what was called the "June rise" had grown appreciably less since Colorado had commenced to use the waters of the river for irrigation, and they attempt to tell us that in the early days this June rise was a thing of certainty, something that could always be counted upon, and was looked to as a matter of great value to the farmers of the Arkansas valley; and yet we find, upon an examination of the record in this case, rather than the brief of counsel for the complainants, that the numerous witnesses introduced, together with the writings of early explorers, mention the river as being dry in the month of June more than in any other months in the year, except July, August, and September, so that we feel justified in saying that whatever this thing termed the "June rise" may have been, it certainly failed to put in an appearance in the State of Kansas in many of the years before Colorado had constructed a ditch

or irrigated an acre of land. We do not for a moment wish to be understood as saying that there are not melting snows in the mountains of Colorado in the month of May, and sometimes as late as the forepart of June, and that these melting snows havs some appreciable effect upon the flow of the stream in the State of Colorado. We do say, however, that they have much less effect than is generally believed by those who have not given careful attention to the subject, and that the effect from these melting snows is and always has been practically nothing within the borders of the State of Kansas; and the June rise, of which Kansas witnesses speak, in so far as it exists at all, in fact is accounted for by the spring rains in their own State, as said by the witness Van Frank, introduced by the United States Government.

The Argument of the Kansas Brief Puts the Effect Before the Cause.

Even if Kansas had not failed to show that there had been any appreciable falling off in the flow of the river in late years, as compared with earlier times, this court, under the evidence introduced, would not be authorized in finding that any decrease in the flow of the river was attributable to the taking of the water of the Colorado-Arkansas in Colorado. In their brief they fix the year 1890 as the time when the Colorado irrigation system was completed and the flow of the river in Kansas became noticeably less. Yet their own witnesses claim that the flow of the river became noticeably less as early as 1885-87, and their witness, J. R. Meade, says that there was a great decline in the river as early as 1880, so that we have counsel for Kansas endeavoring to attribute the lessened flow of the river in Kansas as early as 1880 to 1887 to the diversion of waters of the stream in Colorado as late as 1890.

There is another remarkable thing about this lessened

flow of the river in Kansas, and that is as to the difference in the time when it became noticeable to such Kansas citizens as have ever been able to discover it at all. J. R. Meade, of Wichita, first noticed it as early as 1880. M. M. Murdoch noticed it as early as 1885, while the witness Jacob Stillwagon, introduced by Kansas at Garden City, testified:

> "We first noticed the river beginning to decrease in volume in 1897 or 1898."

This witness had known the river and lived upon its banks since 1882, yet discovered no falling off in the flow until 1897 or '98. This was one of the few witnesses introduced by the State of Kansas who had not been advised when the ditches in Colorado were constructed.

It appears from the above that the witnesses introduced by Kansas vary in the time when the river commenced to diminish, from 1880 to 1898, a period of eighteen years. Counsel for Kansas fixed the time when the Colorado system of irrigation was completed as either 1890 or 1888. If we give them the benefit of the earliest date fixed by them, the witness J. R. Meade discovered the falling off in the flow of the river at least eight years before the completion of the Colorado system of irrigation; and the witness Stillwagon, who lived 200 miles nearer the Colorado line, did not discover any falling off in the flow of the river until at least nine or ten years after the date counsel fixed for the completion of the irrigation system on the Arkansas in the State of Colorado.

Use of the Water in Colorado Has Not Lessened the Low-water Flow in Kansas.

In addition to what has already been said in regard to the flow of the river in Kansas of late years as compared with earlier times, reasons may be given why the use of the water in Colorado would not tend to, and, as a matter of

fact, has not, lessened the flow of the stream in the State of Kansas, and in this connection some brief description of the methods of irrigation prevailing in Colorado should be given. It has been testified by Elwood Mead, expert introduced by the Federal Government, that the system of irrigation practiced in Colorado is among the best in the United States. All waters diverted from the Arkansas river or its tributaries in the State of Colorado, and used for irrigation, are used within the drainage area of the stream, not one drop being taken beyond the divide which separates this drainage area from that of other streams, so that all the water applied to the land, which is not actually evaporated or consumed in plant life, must ultimately and necessarily return to the stream.

The method of irrigation pursued in the Arkansas valley in Colorado may, in a general way, be described as follows, taking for concrete illustration one of the well-known canals lying between Pueblo and the State line: We will assume that the canal is 100 miles in length; that it has a decreed priority of 300 cubic feet per second of time, and that its furthest point from the river is 15 miles, and that it irrigates lands lying between the line of the ditch and the river, equalling an area of approximately 25,000 acres. For the purpose of diverting the water from the river into the head of this canal, a dam of substantial construction, from five to eight feet in height, would be constructed across the river. This dam is really what might more properly be called a weir. It simply raises the waters behind it so that they will flow into the headworks of the ditch, and allows all excess water to spill over the dam. No storage is contemplated, or results, from such works. Just below the head of this ditch will be found a large wastegate, constructed for two purposes: first, for sluicing any sand that may accumulate in the head of the ditch out into the river again, below the point of the dam, and, second,

for the purpose of returning, by a short cut to the river, any excess of water which may at any time be diverted into the head of the ditch. Proceeding down this canal, we will find laterals running in various directions, withdrawing varying amounts of water from the main ditch and conducting it to the individual users, under the system. In carrying the main ditch back fifteen miles from the river, you have gained a position so that the water may be run in either of two directions. It may be run paralled with and in the direction of the flow of the river, being carried at a less grade, or it may be withdrawn from the ditch and run at practically right angles to it, back toward the river, thus furnishing a situation whereby practically all of the lands lying between the ditch and the river may be irrigated. The farmer makes it rain when he needs it, and when his crop has received sufficient water, he stops. It is undisputed and is testified to by all of the experts introduced in this case, that this sort of land cultivation leads to intensive farming, careful cultivation of small holdings, and that a given amount of irrigated ground will support from one to three times the amount of population which can be supported upon a like amount of ground in the humid region, where irrigation is not practiced.

While speaking upon this subject of irrigation, it might be well to say that while counsel for Kansas have often referred in their brief to the large ditch corporations in Colorado, that practically all of the ditches in Colorado, which are not individually owned and of small size, are owned in corporate form by the owners of the lands irrigated from them. The corporate organization is merely adopted as an appropriate and convenient method for handling the business affairs of those relying upon the same ditch.

Return Waters.

Now, there is an affirmative reason, which may be drawn from the irrigation of the lands in the Arkansas valley, as to why the flow of the Arkansas river has not diminished in late years as compared with earlier times, but in fact has increased, if any change has taken place. The only thing which produces streams in the humid region is that the amount of moisture which falls upon the soil somewhere is in excess of that which is evaporated, absorbed by plant life, or held in saturation by the soil. Irrigation, in so far as the soil and streams are concerned, simply tends to reproduce, artificially, the conditions which are found in the humid region. There has never been an acre of ground irrigated for any considerable length of time that did not give off that which in the arid country is called seepage or return waters. Every witness who has testified in this case, who has been familiar with the streams, lands, and conditions existing in the arid part of the country, has stated that the irrigation of the arid lands, in the part of the country with which he is familiar, has shown that only a certain percentage of the water applied to the soil was evaporated or consumed by plant life. For general purposes it may be said that all of the experts agree that from one-third to one-half of the water applied in irrigation, within the watershed of the stream, will, in time and at some place, return to the stream at a point lower down its course. There is nothing which so tends to equalize the flow of the stream as the application of its waters to irrigation on the upper reaches of the stream. This effect has been so noticeable upon the Arkansas river as to attract the attention of citizens of Kansas living upon the stream in the western part of that State. The witness John D. Sidlow says that the low-water flow continues more regularly, or keeps up some flow more permanently, in later years than it did in former ones; and John F. Lewis, of

Great Bend, says that the average surface flow of the river during the last six or seven years, compared with a like period of time in his early acquaintance with the river, has been much more uniform since 1897 than it was previous to that time.

We do not mean to say by this that irrigation in Colorado has had the effect of making the Arkansas river through western Kansas a perennial stream. It has not, and it is doubtful if it ever will; but we do say that it has lessened the flood flow and has increased the low-water flow or the flow at that time of the year when it is most needed by the people of Kansas, and we do say that it has shortened that portion of the channel of the river which Willard D. Johnson indicated by dotted line as being an intermittent stream. That is, the Colorado-Arkansas in times of low water dies at a point farther east than it did in the days before irrigation was practiced in our State. Evidence of early times establishes the fact that the Colorado-Arkansas terminated west of the Kansas-Colorado line, but now extends to Coolidge, and probably Garden City, Kansas, and the Amity canal carries water 30 miles into the State of Kansas. The evidence of those who have been familiar with the Platte river, the Rio Grande, and other streams partaking of the characteristics of the Arkansas, show that this is no extraordinary claim which we have been making, or one peculiar to the Arkansas river. Attorney General Van Orsdel and others familiar with conditions in Wyoming and Nebraska testify that the Platte river is a better river in its low-water flow, and runs farther east than in the days before irrigation was practiced. Counsel for Kansas in their brief have endeavored to break the force of the claim which we here make—a claim which is supported by theory, by science, and by the facts as they appear upon the ground. They say that it is true (because it cannot be denied) that a large percentage of the water applied to the soil for irrigation returns to the stream, but that we have a succession of ditches on the Arkansas river, so

that what returns from the irrigation after one, is captured by the next ditch below, and they endeavor to show by elaborate mathematical calculation that by the time one reaches the Colorado-Kansas line there are no returns to be had. This argument is specious, but not sound. In these calculations they entirely ignore the element of time. Reference has heretofore been made to the fact that such experts as Schlicter and Carpenter have testified that the movement of ground water, or water underneath the ground, is at the rate of about one mile per year, varying with the slope of the country and the character of the soil through which the water has to proceed. This rule applies just as well to ground water produced by irrigation as to ground-water produced by excess of precipitation. It is entirely probable that some of the waters applied to lands lying furthest from the Arkansas river as long as ten years ago have not yet found their way back to the stream, and it is because of this fact that the witnesses have noticed in eastern Colorado and western Kansas a gradual increase in the last six or seven years of the low-water flow of the stream. The waters are returning to the stream which were applied to it last season, if near enough to its banks. Others are returning that were applied to it three seasons ago, and in still other instances waters are returning that in fact were applied to the soil six, seven, or eight years ago, and the full effect of these return waters will in all probability not be realized or felt in Kansas, even if irrigation is not increased, within the next five or six years to come. It is because of these return waters that ditches in western Kansas about Garden City are being rebuilt. It is because of the belief of the people in that section that their river is growing to be a better, and not a worse, river that Garden City today has the nearest approach to a boom which she has had since the collapse some twenty years ago. Why, the Amity canal alone, which is the last large canal down the river in Colorado, and which extends thirty miles over into Kansas, will furnish by return waters from the lands irri-

gated under it and from the flow turned out of its flood reservoirs more water in western Kansas than the Arkansas river ever ran in the low-water season in an ordinary year before irrigation was commenced in Colorado. It appears from the evidence that this company has reservoirs which store 150,000 acre-feet of water. These waters are stored from the flood or high water flow of the stream and from the winter flow. One cubic foot of water per second of time running for 24 hours will make two acre-feet; hence a body of water amounting to 150,000 acre-feet would require 250 days to run off, if running at the rate of 300 cubic feet per second of time. If all of this water is applied to the land, and one-third of it in such application returns to the river as run-off, it would furnish 100 cubic feet per second of time, running constantly for 250 days in the year. In addition to this, the Amity canal's direct appropriation is 283 cubic feet per second of time, so that from this source alone, if the water is applied to the land, there should be very nearly 100 cubic feet per second of time going back as return water. I do not mean to be understood as saying that these return waters can be figured in any such exact proportions for a given number of days. Theoretically, the figuring is correct, but in this instance, as with Kansas, I have omitted the element of time and the distance from the river where the water was applied. The omissions, however, do not in any sense weaken the force of the argument or illustration given; they rather tend to increase the advantages which might be derived from an application of this amount of water as assumed. This question of time and the fact that the water is applied at different distances from the river tends again to produce that equalization of flow in the river which is so desirable, tending to reduce the flood flow and to increase the low-water flow.

Take another illustration. According to the testimony of Professor Carpenter, if there were no irrigation along the river in Colorado, the average flow at the State line would

not be in excess of 600 cubic feet per second of time; hence it must be true that the low-water flow would be less than that amount. Now it appears from the schedule introduced by the intervenor that the divertible flow of the Arkansas river in Colorado runs as high as from 1,000 to 2,600 feet in the months of April and May. If in these months this entire flow is applied to irrigation in Colorado, and one-third of it goes back to the river as return water, we will find that in itself it should furnish during the low-water season as good or a better flow at the State line than the average flow of the stream in the days before irrigation was practiced. It seems to us that upon this proposition alone Kansas must fail in this case, for if it be a fact that the flow of the Arkansas river in Kansas has not been adversely affected by anything that is done in Colorado, then the whole fabric which our adversary has attempted to build up must fall to the ground; and we submit with absolute confidence that Kansas has not only failed to show that the flow of this river in her State has been adversely affected by anything which we have done, but say that we have shown, affirmatively and by a preponderance of the evidence in the case, that the flow of the river is better by reason of that which we have done than it has ever been since it has been known by civilized man. We say this, *first*, because the history of the river shows that it is a broken or double river; that there is very little interdependence between the Colorado Arkansas and the Kansas Arkansas, and that that which is done to the Colorado Arkansas has no effect upon the Kansas Arkansas in times of low water, except as it may increase the flow through the arid portions of the State of Kansas; *second*, because a large number of reputable citizens of Kansas living along the banks of the stream have testified that the average flow of the river has been as good of late years as in times prior to the irrigation in Colorado; *third*, because those who are experts and who have given considerable study to the question say that the natural result of irrigation of large areas of land is to

equalize the flow of the stream, reducing the flood flow and increasing the low-water flow, and that this within their knowledge has been true upon streams in character similar to the Arkansas river, and *fourth,* because citizens of Kansas, as well as citizens of Colorado, have testified that this very fact has been observed as to the Arkansas river in Kansas.

Kansas Underflow.

We now come to a discussion of what Kansas calls the "underflow" of the Arkansas river; and there is no doubt but, in the beginning of this case, at the time the bill was filed by complainant, this thing called the "underflow," and what Kansas claimed had been done to it, was the chief grievance upon which the complainant expected to rely.

I have first discussed the characteristics of the river and its surface flow, because, if our conclusions as to the effect of Colorado irrigation upon the surface flow of the Arkansas river in Kansas are justified, then it matters very little what becomes of the underflow, for Kansas' whole contention as to this underflow is that by the diversion of water in Colorado, we have diminished the surface flow of the river in Kansas, and thereby caused a subsidence of the underflow, and thus brought injury to the lands which this underflow was supposed formerly to have sub-irrigated. In fact, the real complaint of the State of Kansas in this case, as originally outlined, was that the level of what they called the "underflow" or groundwater had been lowered by the use of the waters of the Arkansas river for irrigation in Colorado, and they still make this one of their chief causes of complaint. Thirty pages of their brief are devoted to this particular matter, and within this thirty pages they make quotation from the evidence of witnesses and base some extraordinary claims upon them.

At p. 69, K. B., they say every well, cellar, pool, etc., as well as "every scientific and experimental test made between Syracuse and Arkansas City, each and all, have proved the

presence of an underflow, its current, its expanse to the foothills, and its unvarying dependence upon the flow of the water in the Arkansas river."

They follow this on p. 70 by saying:

> "This underflow of the Arkansas valley has three characteristics: a positive current with a known direction, an extent back to the foothills on either side, and an invariable correspondence to the rise and fall of the river."

Notwithstanding these assumptions in the brief, we beg leave to say that no witness who had ever made any scientific or experimental tests worthy of the name was introduced by the State of Kansas as to this alleged underflow; and we think it is clear, if your Honors please, that they are mistaken in the source of this underflow. Professor Schlicter, the best authority on underground waters in America, in the employ of the Federal Government, investigating the Arkansas valley for the very purpose of redeeming its arid lands, and under whose direction they are building a pumping plant at Garden City, reports to the Government upon this underflow in western Kansas, and tells us, not what counsel for Kansas tell us, but what the underflow in fact is, and with your Honors' permission, I will call attention to it.

> "A few of the principal conclusions may be summarized as follows:
>
> "1. The underflow of Arkansas river moves at an average rate of 8 feet per twenty-four hours, in the general direction of the valley.
>
> "2. The water plane slopes to the east at the rate of 7.5 feet per mile, and toward the river at the rate of 2 to 3 feet per mile.
>
> "3. The moving ground water extends several miles north from the river valley. No north or south limit was found.
>
> "4. The rate of movement is very uniform.
>
> "5. The underflow has its origin in the rainfall

on the sand hills south of the river and on the bottom lands and plains north of the river.

"6. The sand hills constitute an essential part of the catchment area.

"7. The influence of the floods in the river upon the ground-water level does not extend one-half mile north or south of the channel.

"8. A heavy rain contributes more water to the underflow than a flood.

"9. On the sandy bottom lands, 60 per cent. of an ordinary rain reaches the water plane as a permanent contribution.

"10. The amount of dissolved solids in the underflow grows less with the depth and with the distance from the river channel.

"11. There is no appreciable run-off in the vicinity of Garden, Kansas. Practically all of the drainage is underground through the thick deposits of gravels."

"The Underflow in Arkansas Valley in Western Kansas." By Charles S. Schlicter.

He found the same thing that we find counsel all the time telling us here—that belief which was preached by the land agents of the Atchison, Topeka and Santa Fé railroad—of the great good of the underflow. It was a fetish in Kansas. The Santa Fé road and its land agents from the earliest times drew settlers to the country by saying, "Come here; it makes no difference whether the Lord allows the rain to fall on the just and the unjust alike in the Arkansas valley, because we have the underflow," and they sold their lands upon that theory, and this report of Professor Schlicter's shows that he found the same thing, and we saw it throughout the evidence.

He says:

"The former popular belief in a Colorado source of the ground water, has practically disappeared, although a few settlers still adhere to it. During the summer of 1904 one resident of Finney county in-

> formed the writer that the water in his well was invariably roily after a rain storm during the preceding night in Colorado. This corresponds to nearly passenger-train speed for the flow of ground water. The story may be regarded as about the sole surviving ghost of the numerous extravagant beliefs which were formerly current among the settlers."

Counsel for Colorado have never disputed and do not now dispute that there is underlying all the valley lands of the Arkansas river in Kansas, as well as underlying all the great plains, a great body of sheet water, which has a very slight movement in conformity with the drop of the country, and whose level bears a marked conformity to that of the surface of the ground which it underlies; but we contend that this which counsel for Kansas called the "underflow" is merely the ground-water common to practically all of the world. It was very well described by Prof. Willard D. Johnson, of the Geological Survey, introduced by the Federal Government, when he said:

> "My deductions with respect to the extent of that sheet water, are that the ground everywhere has ground water, the world around. * * * There is no particular difference whatever between the sheet or underground waters in the Arkansas valley, and the sheet or underground waters of the other plains sections."

Mr. Johnson was confirmed in this description of what is called the "underflow," but which is more properly designated by the term "sheet-water" by such eminent authorities as Professor Schlicter, introduced by the Federal Government; Prof. Elwood Mead, author of "Irrigation Institutions" and Chief of the Engineering Department of the Reclamation Service; Prof. C. T. Johnson, State Engineer of Wyoming; Prof. L. G. Carpenter, of Colorado, and F. H. Newell, Chief of the Geological Survey, as well as all other

men of scientific attainments introduced upon this particular subject.

We need not, however, go to the testimony of witnesses for Colorado or the Federal Government for a definition of this alleged "underflow," for Prof. Hayworth, head of the department of geology in the University of Kansas, who has given much study to the ground-waters of Kansas, has furnished us a definition for those waters. He says:

> "The term 'sheet-water' is now about as widely used as 'underflow,' and practically means the same thing, so that in common usage, the two terms are synonymous. The latter term expresses within itself the popular idea of the great lateral extent of the water, and says nothing about its amount; while the former expresses the popular notion of movement, and says nothing of extent. The 'underflow' or 'sheet-water' is therefore the water so often referred to in the preceding pages, and corresponds with similar masses of water found in all humid parts of the world, wherever we have in combination the two conditions, a loose porous surface mantle of considerable thickness, and a firm, impervious floor beneath, provided, of course, the floor is not so greatly inclined that the water will flow away as fast as it accumulates."

The above quotation was taken from the report of Professor Hayworth, designated "The Report of The Kansas Board of Irrigation Survey and Experiment," made to the legislature of Kansas in 1895-'6, and published by authority at Topeka in 1897.

All expert witnesses introduced by Colorado and the Federal Government (and there were none introduced by Kansas) agree that all ground or sheet-water has a certain movement, which, though very slow, is in the general direction of the fall of the country, and they all agree that this sheet-water or "underflow," as it is termed by counsel for Kansas, does not have *"an invariable dependence upon the*

flow of the water in the Arkansas river." In fact, every scientific witness introduced in this case by anyone has testified unqualifiedly that this alleged underflow was not dependent upon the Arkansas river and was not influenced by it, except along the very banks or margin of the stream, in no case further than 1,000 to 1,500 feet from the bed of the stream. And these witnesses, who testified to this matter on behalf of the State of Colorado and the Federal Government are not men ignorant upon the subject which they attempt to elucidate. Prof. Carpenter, of Colorado, has given twenty years of his life to the study of such subjects. Prior to his testifying, he had a field party along the Arkansas river in Kansas, investigating the identical question here under discussion for a number of months, and reporting to him from day to day. Prof. Schlicter, introduced by the Federal Government, is recognized as the best expert upon underground waters and their movement in the United States; and Willard D. Johnson, introduced by the Federal Government, is the author of the bulletins published by the Geological Survey, entitled "The Great Plains and Their Utilization." N. H. Darton had made a specific and special study of conditions in the Arkansas valley, and Prof. Newell, head of the Geological Survey, has for years had the supervision of all investigations of this character carried on by the Federal Government. These witnesses did not base their opinion upon the mere fact that water rose or fell in somebody's cellar or well at about the time they thought the Arkansas river rose or fell; they based their opinions upon scientific investigations and careful study of the question under consideration, and they were able to give good reasons for their belief, and, happily, the reasons leading each to the conclusion that what is called the "underflow" in the valley of the Arkansas in Kansas is not dependent upon the surface flow of the river, were the same. Among these very excellent reasons are to be found the following:

First, that in practically every instance the level of the ground-water or sheet-water, as you proceeded back from the river, was found to be higher than the surface of the water in the stream, leading to the not unreasonable conclusion that the water in the stream being lower was not the source of supply of the ground-water, which was higher—it being one of the laws of nature that water does not naturally run up hill if it has an opportunity to run down hill. This was the testimony of Prof. Carpenter, who, in connection with his field party, sunk a number of lines of wells at right angles with the Arkansas river throughout the State of Kansas, and for months conducted a series of experiments with reference to the same, not only for the purpose of determining, at the time of sinking the wells, the level of the ground-water with reference to the river, but the influence, if any, which the rise in the river would have upon the water in the ground. As typical of these experiments, we call attention to Colorado's Exhibit No. 31, which appears in the Colorado Brief at p. 178.

Mr. Justice HOLMES: Is that the same as this Exhibit that says "Profile Across the Valley"?

Mr. DAWSON: Yes, sir; No. 31. Now, the line is run at right angles. The river in the lower diagram appears right above the letter "f" in "Profile," and you will notice what all of the experts testified to, that the level of the ground-water bears a marked conformity to the level of the surface of the ground. This line runs sixteen miles south of the river and twenty-six miles north of the river. As you leave the river and go north, the red line underneath the surface of the ground shows the rise and fall of the level of the ground-water, and you will see it is higher than the level of the water in the river. It did not come from the river. Even in Kansas water does not run up hill. It goes to the north there for sixteen miles and constantly rises as you go back from the stream. To the south

you will see it correspond to a rise in the ground, and then it drops down as the surface of the ground falls away.

Mr. Justice HOLMES: Is it lower in other places?

Mr. DAWSON: Yes, your Honor; after you cross the divide it is lower.

It seems hardly necessary to quote or call attention to the testimony of the other experts in the case, because it cannot be denied that all of those who had conducted experiments in this particular found the same condition, and, because of that fact, testified that the ground-water furnished a source of supply to the river, rather than being supplied from the river, and that the movement of this ground-water was with the river and toward the river—with the river because the general drop of the country was in that direction, and toward the river because the local drop was in that direction.

We cannot, however, refrain from calling attention to the testimony of some of the experts introduced by the Federal Government.

Willard D. Johnson, of the Geological Survey, who made a thorough investigation in respect to the underflow near Garden City, Kansas, says, among other things:

> "From the investigations I have made with respect to this matter, I would say that the origin of the underground waters everywhere is the rainfall."

And N. H. Darton, of the same service, says:

> "For the last eight years I have made investigations with respect to the underground or sheet waters of the Great Plains of the arid region of this country. The source of the underground waters along the Arkansas river is the rainfall and the melting snows."

F. H. Newell, head of the Geological Survey:

> "This underground or sheet water extends along the valley of the Arkansas river as a part of the

> general sheet-water underlying the entire plains area. I have made investigation with respect to the sheet or underground water along the Arkansas river in Colorado and Kansas. In regard to its source, as a rule it is derived most largely from local rainfall, as testified by the fact that the great body of the sheet-water is at a higher level than the level of the rivers, as a rule."

And Prof. Schlicter, who is investigating for the installing of a Government pumping plant seven miles above Garden City to draw the water from the underflow, says that his investigations have convinced him that 100 second-feet of water can be pumped for 150 days, and that at Garden City, seven miles below, there will be no effect upon the ground-waters because of said pumping.

In view of these statements of disinterested experts, who made their investigations independent of this suit, it is rather extraordinary that Kansas, in her brief, at pages 183-4, should say:

> "This underflow depends upon and is fed by the surface river, and not by drainage from the surrounding country."

Such a statement is even more extraordinary when we find Kansas' own witnesses opposed to the contention of her brief. Robert R. Wright, a witness for complainant, at Dodge City, testified:

> "I venture to say that the water in that well is three or four feet higher than the water in the river. At different places, as you go up the hillside, that increases. I think that possibly within 400 feet of the river, you can find the water level four feet or more higher than the water in the river. * * * In my judgment this underflow comes from the entire drainage of the Arkansas river; as the water drains from these highlands on either side of the river it strikes the well."

Again, the witness Craig, introduced by complainant, says:

> "I think the sheet or ground water in this valley follows the contour of the surface of the country. * * * I know enough from the lay of the country and the depth of the water, to know that when we get back from the river it is some higher than the river."

There were so many experts and so many intelligent men who were not experts that testified that the level of this ground-water was higher than the level of the water in the river, that Kansas found it necessary, after having made her case in chief, to endeavor to overcome this evidence by going back over the course of the Arkansas river in her own State, introducing in rebuttal witnesses who simply cumulated upon those who had been introduced in chief, who concluded that the water in the river must supply all of this underflow, because they claimed to have noticed a rise and fall of water in their wells corresponding with the rise and fall of the water in the river.

In all this list of witnesses introduced, however, both in chief and in rebuttal, there cannot be found a single one who had ever made any scientific investigations, or, in fact, any experiments that are entitled to any weight, unless it be perhaps the witness Dickinson, quoted from so extensively at pages 81-82 of the Kansas brief, who says that for the purpose of determining the current and direction of the flow of the ground-water he stood upon the bank of an open trench and spat tobacco juice in it, and noticed that it passed from the west end, which was upstream, down to the lower end and out of sight. Something of the character of the testimony relied upon by the State of Kansas to establish their contention as to the underflow can be drawn from a consideration of the testimony of this valuable witness, who was introduced in rebuttal and was examined by counsel for Kansas at great length. By a reading of page 1994 of the record it will be found that this witness Dickinson, who in a

crude sort of way had been trying to qualify as an expert, testified that the underflow traveled through the ground at the rate of ten rods an hour, and on pages 1998–9 he said that the underflow or water in the ground was at least 100 feet in depth, and in places 80 miles in width, and that it was practically all supplied from the Arkansas river, and that this river flow practically all came from the State of Colorado. From the testimony given in this case, as well as from general knowledge, it can be easily computed that this great underground stream which he speaks of, if flowing at the rate and with the velocity he stated, would have a discharge of about 633,600 cubic feet per second of time. When it is borne in mind that the undisputed testimony shows that the average flow of the Arkansas river just below the Royal gorge at Cañon City for the last sixteen years has only been about 750 cubic feet per second, the absurdity of his contention (which is but a counterpart of that of many other witnesses introduced by Kansas) is evident; in other words, he would have us believe that this stream from Colorado, which he claims furnishes practically all the flow of the river in Kansas, is, with its average flow of 750 cubic feet per second of time, keeping up and maintaining an underflow with a discharge capacity more than 844 times as great as the river upon which it depends for its supply.

This witness, who is made much of by counsel who introduced him, made further rare and startling statements. This underflow, in his vivid imagination, was capable of accomplishing miracles by the side of which those of ancient times would fade into insignificance. In conducting it from one place to another ridges, divides, and inequalities of ground had no terrors for him. He conducted the underflow across valleys, underneath hills and all other obstructions, and where he couldn't get it under he siphoned it over. In this way the witness had the Arkansas river acting as the good father of the Rattlesnake and many other small streams, though they are divided from the river by intervening ridges.

He also developed the theory which counsel for Kansas expended so much trouble on throughout the case, of showing that all the underflow, and practically all other waters in the valley of the Arkansas, come from the river, by saying that whenever he found any springs on these outlying streams they broke out on the side which was up the river, but of course on cross-examination he was compelled to concede that that was the natural place for the springs to break out. It needs no evidence or argument to show that wherever there is a break across the country such as is made by a creek or other stream that the springs appearing along the banks generally are to be found on the upper side—that is, the water is going down hill, not going up hill.

Kansas Brief and Evidence Make the Effect Precede the Cause as to the Underflow.

Without again quoting the evidence of witnesses to show this fatal defect in Kansas' position, we may state without fear of successful contradiction that Kansas in her brief and by her evidence in regard to the lowering of the underflow has fallen into the same error noticeable in the brief and evidence in regard to the surface flow of the river. Of course this would necessarily be true if the position of Kansas in regard to the source of supply of this underflow were true, because she makes the underflow depend upon the surface flow of the river, and hence the falling off in the flow of the river, and the lowering of the level of the underflow would, if her contention is correct, be noticeable at about the same time. It will only be necessary in this connection to call attention to the fact that the witnesses Meade and Murdoch, both of whom have been heretofore quoted, testified to the falling off in the flow of the river a number of years prior to the time when Kansas claims that the irrigation system of Colorado was completed. These same witnesses, together with many others, have testified along the same lines in reference to the

date when the level of the ground-water became apparently less.

To summarize this whole matter, we have many of the Kansas witnesses testifying that the level of the ground-water had been lowered at a date prior to the time when counsel for Kansas claimed that the ditches had had any appreciable effect upon the flow of the river. If these witnesses are correct in their statements, then it must be that the level of this ground-water is not dependent upon the surface flow of the river, or else we have done nothing to the river which has affected the surface flow. But we are not driven to this sort of negative argument to show that the level of the ground-water has not been injuriously affected by anything which has been done by Colorado, for many good citizens of Kansas, called as witnesses by the State of Colorado, testified that there had been no change in the level of the ground-water throughout that part of the State with which they were familiar, and which was in all instances along the valley of the Arkansas. We might quote indefinitely witness after witness, called by the State of Colorado from among Kansas' best citizens, who testified that their observation had been that there was no change in the water level of late years as compared with the water level of the years long preceding the irrigation of lands to any extent in the State of Colorado; so that upon this phase of the question, which was the one most strongly emphasized by Kansas in introducing her evidence, both in chief and on rebuttal, we have every reason to say, regardless of what the law in this case may be, that as a matter of fact Kansas has not been able to show any injury by reason of the diminishing or lowering of the underflow throughout the Arkansas valley in Kansas. She has failed to show that this underflow was dependent upon the surface flow of the river. Some 70 of her own citizens have testified that whatever it is dependent upon, it is the same today that it always was, and, as we have before shown in this discussion, if Kansas' contention that the underflow

is dependent upon the river were correct, still she has failed to show that the surface flow of the river has been injuriously affected by anything which has been done by Colorado or her citizens. Some of the witnesses introduced by Kansas even went so far as to state alleged facts which, if true, would make the level of the ground-water in Wichita higher of late years than in earlier times, if their other contention, that the level of the ground-water was influenced by the level of the water in the river, were true.

The witness Meade, introduced by complainant on rebuttal at Wichita, Kansas, says that he thinks the level of the underflow in Wichita is about the same as in the early days, if not higher, and believes this, he says, because he thinks the stream is higher.

He is borne out in this by the statement of the witness Ransom H. Brown, introduced at the same place in rebuttal, who says that the river has filled up in that vicinity at least one to one and a half feet; and that because of this raise in the bed of the stream the surface of the underflow must be correspondingly higher than in the early days.

Kansas Ditches.

I will say practically nothing as to the Kansas ditches. Neither in the bill nor the amended bill filed by Kansas in this case were they mentioned. One will search these documents in vain to find any claim based upon the theory of appropriation or upon the fact that any ditch had ever been built in Kansas.

We heard but little of the Kansas ditches until counsel reached western Kansas in the examination of their witnesses in rebuttal. We had a right to assume that they based nothing upon that, because at page 5 of the arguments by Mr. Ware, filed on the demurrer by Kansas in this case, he says:

> "We are not asking that a ditch be closed in Colorado in order that one may be opened in Kansas.

> We are only asking that sufficient water be permitted to flow in our river to fertilize our fields in the natural way."

That is what they said in their brief upon this matter; so I will leave that to my friend, who represents one of the great ditches here, if he cares to say anything upon this subject, which is absolutely foreign to the complaint in this case.

Citizens of Kansas Have Suffered No Injury.

We have given many reasons why the citizens of Kansas could not have suffered any injury by reason of anything which Colorado has done to the Arkansas river in the State of Colorado; but aside from the reasons why no such injury could result, we are able to say with the highest degree of certainty that as a matter of fact this record shows affirmatively that the citizens of Kansas have not in fact suffered any injury.

Quoted in Colorado Brief, from pp. 9 to 29, will be found statements from witnesses introduced by Kansas herself, wherein it is said that the crops have been as good, that the country is as prosperous, and that land values are as high in late years as they ever were in any period of the State's history. In this list are quoted some 36 witnesses produced by Kansas herself, who testify to this general condition of prosperity, to the increased valûes of lands and to the productiveness of the soil. In addition to this, Colorado, herself, introduced from among the citizens of Kansas, some 80 witnesses, practically all of whom testified that the last six or seven years in Kansas had been the best that the State had ever seen.

No one can read this record without feeling that the days when Kansas was referred to as a suffering community have passed, without feeling that she has taken her true place among the most prosperous, the richest, and most powerful

States of the Union. Why, since this case has been commenced, the prosperity in Kansas has been such, owing to the tremendous crops which she has raised, that she has actually been crowding her border over into Colorado to find room to hold the prosperity which has come to her; and in this prosperity the Arkansas valley has shared to its full extent with every other part of the State. This is not strange, because an examination of Colorado's Exhibit Nos. 28 and 29 will show that there has been a wonderful uniformity in the rise and fall of crop production in the various valleys of the rivers paralleling each other across the State of Kansas. There was no bit of evidence introduced in this case which caused counsel for Kansas more concern and which has been harder to overcome than that which has been shown by these exhibits, which put in condensed form the history of crop productions in the valleys of three rivers in the State of Kansas; the valley of the Solomon on the north, the Smoky Hill in the center, and the Arkansas on the south.

It happens that the State of Kansas has been keeping a record of her crop productions by counties since 1873. These of late years have been prepared and published by the Hon. —— Coburn, head of the Agricultural Department of the State of Kansas. These reports have been published by the State of Kansas under authority, and are taken as the true and best showing of crop production in that State. The State of Colorado took these reports, and upon the two important crops of corn and wheat reduced the showing made by the figures of production to graphic form, so that in the exhibits to which we have referred the exact up and down of crop production in the counties traversed by these three rivers may be seen at a glance.

A group of counties running north and south has been taken across the three rivers. Starting with the earliest year for which reports were kept, a line is begun. As the crop is heavier in a given year, the line runs up; as it is

lighter, it runs down; and no one can take these diagrams and look at them without being impressed by the wonderful similarity in the up-and-down of the lines for the three groups of counties taken.

These exhibits show beyond the shadow of a doubt that the same rise and fall of crop production occurred in all of the three valleys, while it appears in the evidence that no interference with the flow of the Solomon or Smoky Hill has occurred by reason of irrigation upon those streams; hence it must be true that that which has caused the rise and fall of crop production in one valley, has operated in the other, and if there has been a rise and fall in production in the Arkansas valley, which occurs in the other two, it comes from some cause other than the fact that Colorado has taken water from the Arkansas river for the purposes of irrigation.

No Thought of Injury by Farmers Until Agitation of this Suit.

There was a line of testimony introduced by the State of Colorado which has a bearing upon all of the questions involved in the case, and which seems to us to establish, beyond any sort of question, that this suit, which has been made so much of by the complainant, was not the outgrowth of the feelings of the people of the State of Kansas.

As has heretofore been said, Colorado introduced some 80 witnesses who were citizens of the State of Kansas, engaged in farming and living along the river from the Colorado-Kansas line to the Kansas-Oklahoma line. Among the questions propounded to these witnesses was one as to whether or not they had ever heard the questions involved in this suit discussed prior to about the time that the suit was brought, and out of the eighty witnesses introduced, we think it is safe to say that at least seventy testified that, prior to the time of the bringing of this suit, they had never heard among the farmers residing along the Arkansas river any

complaint that the river was falling off in its flow or that the lands had been injured in value. In other words, here is a matter which Kansas claims is of such vital importance as to justify her, as a sovereign State, in bringing a suit for the benefit of all of the people of the State of Kansas; and yet, from among her own best citizens living in the very region where it is claimed the injury has taken place, we are able to find witness after witness who testifies that never, prior to the beginning of this suit, did he hear any complaint among his neighbors as to any of the injuries which Kansas says are the basis of her claim for injunctive relief against the State of Colorado.

This is a most extraordinary situation, and one which it seems to us casts upon Kansas the burden of showing by the strongest and clearest evidence that some injury has occurred before she can expect to recover in this proceeding.

This case has been from the first one in which the people of Kansas themselves have not been united. The first witness placed upon the stand by the State of Kansas was the Hon. M. M. Murdoch, owner of the Wichita *Eagle,* who has heretofore been referred to in this argument. He testified as to how he had made this river, in earlier times, a matter of political discussion and importance, and how in later times he had "kept up a racket" in his paper until he had succeeded in having the legislature of Kansas authorize the bringing of this suit.

Conclusions.

I had the good fortune (or the misfortune) to be with this case from the time the first witness was sworn at Wichita until practically the conclusion of the testimony at Topeka. For Colorado I examined a large percentage of all of the witnesses introduced in the case, and with the knowledge drawn from seeing and hearing the witnesses and absorbed by being in the State of Kansas, among her own people, I

cannot get away from the conclusion that this suit, if left to the voice of the people of that State, would never have been brought, and if referred to them at this time, would be decided adversely to the contention of counsel who here appear for the complainant.

It would be an extraordinary thing that this suit should have originated in the city of Wichita, if we did not bear in mind the testimony of Col. Murdoch. Wichita lies well within the humid regions, where the question of irrigation and the flow of the river is of much less importance than in the western counties of the State. It appears by the evidence that the counties which joined hands, under the guidance of Col. Murdoch and the Wichita *Eagle,* to bring about this suit, were Reno, Sedgwick, Sumner, and Cowley, all lying well within the humid region; that the counties of Ford, Edwards, Pawnee, Barton, and Rice were and are non-committal upon the questions involved in the suit, and that the counties of Hamilton, Kearney, Finney, and Gray, being the counties lying furthest west on the Arkansas river, in Kansas, stand as firmly and strongly for the doctrine of appropriation and the use of water for irrigation as does the most ardent advocate of those doctrines residing within the State of Colorado.

Ever since Kansas closed her case in chief I have felt that the questions of law in regard to riparian rights and the doctrine of appropriation were of secondary importance in this case, for I have believed, as strongly as it is possible for one to believe, that whatever doctrine was to prevail, as to the waters of this river, the State of Kansas could not recover in this suit upon the facts.

We believe that complainant has failed upon every proposition which she has sought to establish with regard to this river in this case. She has not shown that the flow of the river has been diminished at all of late years; she has not shown (even if it were conceded that it had been

diminished) that that which Colorado has done has been the cause for that diminution. She has not shown that her alleged underflow is a stream flowing in a known and well-defined channel. She has not shown that this underflow draws its water or source of supply from the Arkansas river. She has not shown that the underflow is any less or that its level is any lower than it was in the earliest times, when the valley of the Arkansas was first known to the white man. She has not shown that the State of Colorado, as a State, is diverting any water; that the State of Kansas is injured, either as a State or as the representative of her citizens. She has not shown that the individuals along the river have suffered any injury; she has not shown that her river was ever navigable within the boundaries of the State; and she has failed utterly to establish a single affirmative proposition that she laid down as her ground for complaint, in the bill which was filed in this suit.

On the other hand, the State of Colorado has shown beyond dispute that the Arkansas river is a broken river; that it has always been in the habit of going dry throughout 150 or 200 miles of its course in western Kansas; that the flow of the river in Kansas, except in flood time, is not dependent upon the river in Colorado, and that what is done to the river in Colorado has practically no effect upon the streams in the State of Kansas.

We have shown that the return waters from the irrigation of 350,000 acres of land in the State of Colorado have benefited the flow of the river in Kansas, have made it more certain, have equalized the stream by reducing the flood flow and increasing the low-water flow.

We have shown that Kansas' alleged underflow was the mere ground-water, common the world over; that it is not dependent upon the river, but is a source of supply to the river; that it comes, not from the river, but is flowing toward and with the river, increasing its supply. We have

shown that it has not diminished in quantity and has not changed in character; that its level is maintained as well today as it was when the country was first discovered and settled.

We have shown that land values have been steadily increasing in the State of Kansas; that the crop production of late years has been better, on the average, than for any like period in the earlier times; that the people are prosperous, happy, and content, and the only injury lies in the mind of the Wichita *Eagle* and its editor and counsel which represent Kansas in this suit.

We have shown that the crops along the Arkansas valley are not dependent upon the flow of the river, and that the same rise and fall in the production per acre takes place in the valleys along other streams in the State as have been noticeable in the valley of the Arkansas.

We have shown that under no possible conditions could the alleged underflow be influenced by the river for a distance of more than 1,000 or 1,500 feet on each side of the river, and that this influence would be very slight. We have shown that, taking this as a basis, the greatest possible acreage in Kansas which is at all dependent upon the flow of the river is a little over 70,000 acres, and for the benefit of these few farmers on the first bottom lands of the Arkansas valley in Kansas, a large percentage of whom say they have not been injured and have no cause of complaint, the State of Kansas asks this court to return to the desert 350,000 acres of the most productive land in the world, now being farmed and irrigated along the valley of the Arkansas in the State of Colorado; to make desolate a country which now supports from 150,000 to 175,000 inhabitants, is producing crops of the value of more than $6,000,000 a year, and maintaining towns and cities, all of which are practically dependent upon the irrigation of those lands.

We have talked with a great deal of feeling in this case, because we realize that the life of Colorado is absolutely de-

pendent upon it. There might be a principle established in this case which would put out of commission two and a half million acres in our State as productive as any other acres in the world, and ten million acres now redeemed in the United States would be jeopardized, and the sixty million acres which the people familiar with this subject say can ultimately be redeemed will be put beyond the possibility of redemption, and homes for a possible future population of from 60,000,000 to 100,000,000 of people wiped out, if the riparian doctrine first insisted upon by counsel for Kansas in this case were to prevail; ten million acres now blooming and productive would be returned to the desert and sixty million acres of unredeemed desert would have to remain a desert.

I thank your Honors very kindly for permitting me to talk so rapidly, because my time was short; and I thank you very sincerely for your attention.